UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable MaryJoan McNamara
Administrative Law Judge

In the Matter of **CERTAIN MOVABLE BARRIER OPERATOR SYSTEMS AND COMPONENTS THEREOF**	**Inv. No. 337-TA-1209** **(Enforcement Proceeding)**

COMPLAINANTS OVERHEAD DOOR CORPORATION AND GMI HOLDINGS INC.'S PREHEARING STATEMENT

Pursuant to Order No. 6 and Ground Rule 11.1, Complainants Overhead Door Corporation and GMI Holdings Inc. (collectively, "Overhead Door"), respectfully submit this Prehearing Statement. Overhead Door has prepared separately, and is filing, concurrently, a Pre-Hearing Brief that sets forth in detail the legal, factual, and equitable bases for the arguments it will present at the hearing.

I.   WITNESSES

Overhead Door identifies the following expert witnesses it expects to appear at the hearing. A brief outline of each witness's proposed testimony is included below. Copies of the curriculum vitae for Overhead Door's expert witnesses are attached as **Attachments A through F** and the Chamberlain Group Inc's expert witnesses are attached as **Attachments G through I**. In addition, Overhead Door reserves the right to call any witness that is identified as a witness by Respondent in this Investigation. Overhead Door will also rely on deposition testimony, subject to designation before the hearing and any agreements reached by the parties. Specifically, Overhead Door intends to rely on the deposition testimony of all witnesses deposed in this Investigation, including those identified in Overhead Door's pre-hearing brief filed concurrently. Overhead Door reserves the

right to call any deposition witness live in the event that individual's deposition testimony is not admitted into the record.

A. Expert Witnesses

Pursuant to Ground Rule 11.1(a), Overhead Door intends to call the following expert witnesses:

Nikolaus Baer	
Address: 1864 Walnut Drive Mountain View, CA 94040	Nikolaus Baer is an expert in the development and analysis of software or source code. Overhead Door will call Mr. Baer to testify as a direct witness. Mr. Baer will testify about the background and subject matter of his expert reports, including an overview of the '935 Patent and infringement of '935 Patent by the Accused Products. A copy of Mr. Baer's curriculum vitae is attached hereto as **Attachment A**.
Steven B. Leeb	
Address: MIT Room 10-069 Cambridge, MA 02139	Dr. Steven B. Leeb is an expert in the field of electrical engineering. Overhead Door will call Dr. Leeb to testify as a direct witness. Dr. Leeb will testify about the background and subject matter of his expert reports, including an overview of the '935 Patent and infringement of '935 Patent by the Accused Products. A copy of Dr. Leeb's curriculum vitae is attached hereto as **Attachment B**.
Carla Mulhern	
Address: 800 17th Street Suite 400 Washington, D.C. 20006	Carla Mulhern is an expert in the application of microeconomic principles to business litigation. Ms. Mulhern will testify about the background and subject matter of her expert reports, including bond and civil penalty calculations and issues. A copy of Ms. Mulhern's curriculum vitae is attached hereto as **Attachment C**.
Joshua Phinney	
Address: 420 Lexington Avenue Suite 1740 New York, NY 10170	Dr. Joshua W. Phinney is an expert in the field of electrical engineering and wireless communications. Overhead Door will call Dr. Phinney to testify as a direct witness. Dr. Phinney will testify about the background and subject matter of his expert reports, including testing of the Accused Products. A copy of Dr. Phinney's curriculum vitae is attached hereto as **Attachment D**.

Jonathan Wells	
Address: 533 Peters Avenue Suite 204 Pleasanton, CA 94566	Dr. Jonathan Wells is an expert in the field of physical electronics and wireless communications. Overhead Door will call Dr. Wells to testify as a direct witness. Dr. Wells will testify about the background and subject matter of his expert reports, including an overview of the '935 Patent and infringement of '935 Patent by the Accused Products and Covered Products. A copy of Dr. Wells' curriculum vitae is attached hereto as **Attachment E**.
David Williams	
Address: P.O. Box 220442 Saint Louis, MO 63122	Dr. David Williams is an expert in wireless communications. Dr. Williams will testify about the background and subject matter of his expert report, including ITC Findings relating to the '895 Patent and the scope of the Remedial Orders. A copy of Dr. Williams' curriculum vitae is attached hereto as **Attachment F**.
Walter Overby (Adverse)	
Address: 11 SW 51st Street Des Moines, IA 50312	Overhead Door will call Mr. Walter Overby to testify to the contents, bases, and scope of his expert report at the hearing. A copy of Mr. Overby's curriculum vitae is attached hereto as **Attachment G**.
Dan Schonfeld (Adverse)	
Address: 851 S. Morgan Street 1020 SEO Chicago, IL 60606	Overhead Door will call Dr. Dan Schonfeld to testify to the contents, bases, and scope of his expert reports at the hearing. A copy of Dr. Schonfeld's curriculum vitae is attached hereto as **Attachment H**.
Thomas Vander Veen (Adverse)	
Address: 111 South Wacker Street 50th Floor Chicago, IL 60607	Overhead Door will call Mr. Thomas Vander Veen to testify to the contents, bases, and scope of his expert reports at the hearing. A copy of Mr. Vander Veen's curriculum vitae is attached hereto as **Attachment I**.

B. Fact Witnesses

Pursuant to Ground Rule 11.1(a), Overhead Door intends to call the following fact witnesses:

Steve Janas	
Address: One Door Drive Mount Hope, OH 44660	Steve Janas is the vice president and general manager for sales and marketing at Overhead Door. Overhead Door will call Mr. Janas to testify about the industry, Overhead Door's business, and the harm caused to Overhead Door by Chamberlain's violations.
Jeremy Jenkins (Adverse)	
Address: 1509 Keim Trail St. Charles, IL 60174	Jeremy Jenkins is the senior director of electrical engineering systems for the Chamberlain Group. Overhead Door will call Mr. Jenkins to testify about infringement via his deposition testimony.
John Lausas (Adverse)	
Address: 3332 Noble Drive Woodridge, IL 60517	John Lauses is the vice president of finance and corporate controller for the Chamberlain Group. Overhead Door will call Mr. Lausas to testify about sales of Chamberlain's products via his deposition testimony.
Jeffrey Meredith (Adverse)	
Address: 300 Windsor Drive Oakbrook, IL 60523	Jeffrey Meredith is chief executive officer of the Chamberlain Group. Overhead Door will call Mr. Meredith to testify about civil penalty, and whether Chamberlain acted in good faith to comply with the Remedial Orders via his deposition testimony.
Brendan Lyons (Adverse)	
Address: 5722 Hampton Drive Long Grove, IL 60047	Brendan Lyons is a senior vice president and general manager of the residential business unit for the Chamberlain Group. Overhead Door will call Mr. Lyons to testify via his deposition testimony.

II.   EXHIBITS

Pursuant to Ground Rule 11.1(b), Overhead Door identifies the exhibits expected to be introduced at the hearing as **Attachment J**.

III.   STIPULATIONS

Pursuant to Ground Rule 11.1(c), Overhead Door submits that the Private Parties are finalizing an importation stipulation.

IV. PROPOSED AGENDA: PRE-HEARING CONFERENCE

Complainants propose the following agenda for the pre-hearing conference:

1. Resolution of any pending motions;

2. Resolution of any other preliminary matters raised by the ALJ or the parties.

V. ESTIMATED DATE AND APPROXIMATE LENGTH FOR APPEARANCE OF EACH WITNESS

The estimated date and approximate length for appearance of each witness is:

Date	Witness	Overhead Door (hours)	Chamberlain	Staff (minutes)
Overhead Door Case-in-Chief				
February 15, 2023	Steve Janas	0.3	0:15	10
February 15, 2023	Steven Leeb	1.25	1:20	20
February 15, 2023	Joshua Phinney	0.5	0:35	5
February 15, 2023	Nikolas Baer	0.5	0:30	5
February 16, 2023	Jonathan Wells	0.75	0:30	15
February 16, 2023	David Williams	0.5	0:15	0
February 16, 2023	Carla Mulhern	1.0	0:25	10
Chamberlain Rebuttal Case				
February 16, 2023	Jeffrey Meredith	0.5	0:30	12.5
February 16, 2023	John Lausas	0.2	0:30	12.5
February 16, 2023	Jeremy Jenkins	0.3	0:50	10
February 17, 2023	Walter Overby	0.5	1:20	25
February 17, 2023	Dan Schonfeld	1.0	0:20	5
February 17, 2023	Thomas Vander Veen	0.5	0:30	10

Overhead Door submits its estimated length for appearance of each witness based on the best information currently available. Overhead Door intends to continue to evaluate its proposed presentation of evidence at the hearing and may revise their proposed witness list and estimated times accordingly. Overhead Door may revise its proposed witnesses and/or estimated times in response to any action by Chamberlain that impacts the scope of this Proceeding or Overhead Door's own proposed witness list and/or estimated times.

VI.   SETTLEMENT

Pursuant to Ground Rule 11.1 (f), Overhead Door certifies that good faith efforts were undertaken to settle the issues in this Proceeding with Chamberlain.

Dated: January 23, 2023

Respectfully Submitted,

/s/ Bert C. Reiser
Bert C. Reiser
Michael A. David
LATHAM & WATKINS LLP
555 Eleventh Street, NW
Suite 1000
Washington, D.C. 20004-1304
Telephone: (202) 637-2200
Facsimile: (202) 637-2201
bert.reiser@lw.com
michael.david@lw.com

Kenneth G. Schuler
David K. Callahan
LATHAM & WATKINS LLP
330 N. Wabash Avenue, Suite 2800
Chicago, IL 60611
Telephone: (312) 876-7700
Facsimile: (312) 993-9767
kenneth.schuler@lw.com
david.callahan@lw.com

Clement Naples
LATHAM & WATKINS LLP
885 Third Avenue
New York, NY 10022-4834
Telephone: (212) 906-1200
Facsimile: (212) 751-4864
clement.naples@lw.com

Giri Pathmanaban
LATHAM & WATKINS LLP
301 Congress Avenue, Suite 900
Austin, TX 78701
Telephone: (737) 910-7300
Facsimile: (737) 910-7301
giri.pathmanaban@lw.com

Joseph H. Lee

LATHAM & WATKINS LLP
650 Town Center Drive
20th Floor
Costa Mesa, CA 92626-1925
Telephone: (714) 540-1235
Facsimile: (714) 755-8290
joseph.lee@lw.com

Counsel for Complainants Overhead Door Corporation and GMI Holdings Inc.

CERTIFICATE OF SERVICE

It is hereby certified that copies of **COMPLAINANTS OVERHEAD DOOR CORPORATION AND GMI HOLDINGS INC.'S PREHEARING STATEMENT (PUBLIC VERSION)** were served on February 2, 2023 as follows:

The Honorable Katherine M. Hiner Acting Secretary to the Commission U.S. International Trade Commission 500 E Street, SW, Room 112 Washington, DC 20436	By EDIS
The Honorable MaryJoan McNamara Administrative Law Judge U.S. International Trade Commission 500 E Street, SW, Room 317 Washington, DC 20436	By Email and Box: McNamara1209E@usitc.gov
Aaron D. Rauh Office of Unfair Import Investigations U.S. International Trade Commission 500 E Street, SW, Room 401 Washington, DC 20436	By Email and Box: Aaron.Rauh@usitc.gov
Kenton W. Freeman, Jr. FISH & RICHARDSON P.C. 1000 Maine Avenue, SW, Suite 1000 Washington, DC 20024 *On behalf of Respondent The Chamberlain Group, LLC*	By Email: CGI-OHDITCFRService@fr.com CGI-001@polsinelli.com

/s/ Erika J. Weinstein
Erika J. Weinstein
LATHAM & WATKINS LLP

ATTACHMENT A

Nikolaus Baer
1864 Walnut Dr. • Mountain View, CA • (650) 933-5292 • Nik@BaerIP.com

EXPERIENCE

Baer Consulting, Mountain View, CA — JUN 2012 - Present
Principal
Intellectual Property Technical Advisor
- Testifying expert witness and technical analyst and for software intellectual property (IP) litigations including patents, trade secrets, and copyright matters
- Court appointed Special Master
- Evidence of use, prior art, invalidity, and non-infringement patent analysis
- Software source code functional and literal analysis for active litigation and pre-litigation matters
- Reverse engineering, decompiling, disassembling, and testing of computer software and hardware circuits
- Patent prosecution
- Software design and development

Zeidman Consulting, Cupertino, CA — FEB 2008 - JUN 2012
Project Manager — MAR 2010 - JUN 2012
Research Engineer — FEB 2008 - MAR 2010
- Managed software development and analysis projects
- Over 20 software intellectual property (IP) litigations
  - Managed software IP analysis and composed expert reports regarding patents, trade secrets, and copyright matters
  - Composed claim charts for patent invalidity, infringement, and non-infringement
  - Scoured academic papers, books, articles, and software manuals, as well as installed software over 20 years old on even older computers to find prior art
  - Testified in deposition for software IP litigation
- Increased security of our client's valuable materials by developing an internal asset tracking web application
- Created a customer relationship management tool that exponentially increased the number of potential customers contacted
- Independently developed a report automation tool that became an integral part of the company workflow and a key selling point of the consulting services
- Developed source code comparison relational filtering and analysis tool
- Authored seven published papers and articles based upon detailed research in several aspects of software comparison technologies

Theranos, Inc., Palo Alto, CA — AUG 2006 - FEB 2008
Firmware Developer
- Lead developer of device control system that provided a static interface and API to users while concurrently allowing interchangeability of multiple communication and device drivers to match actual hardware
- Designed and built multi-threaded system initialization, movement control, and communications
- Performed product development, including prototype design, implementation, and testing in pre-clinical settings on a multiprocessor system with Java J2ME in the communication environment and real-time C in the device control environment
- Responsible for development and documentation of use cases, test cases, system requirements, class models, safety, and critical systems analysis

Zeidman Technologies, San Jose, CA — MAR 2006 - AUG 2006
Software Developer
- Developed multifaceted GUI in VB for Ethernet networking emulation software
- Upgraded complex multi-threaded DLL in VC++
- Designed and built large data post-processing methodology
- Researched and developed data-passing algorithms between multi-threaded VC++ and VB applications

Nascent Systems Technology, Monterey, CA   JAN 2005 - MAR 2006
Software Developer
- Ported line-of-sight terrain database desktop application onto mobile devices with RS232, Bluetooth, Wi-Fi, and USB communication
- Managed and recruited software consultants to reduce development time and increase profit
- Built and maintained marketing website using HTML and JavaScript with Flash Demo
- Wrote and published complex applications' demonstrations and tutorials
- Developed search solution in Java for making extensive documentation user-friendly which reduced a month-long documentation job to a few hours

Vareda Engineering, Santa Barbara, CA   APR 2003 - JAN 2005
Project Engineer/Programmer
- Designed and built specialized testing and research equipment using Orcad, PADS, LabView, Assembly, Flash, Eagle, C, C++, and Java
- Built embedded circuits and matching custom drivers for PC control and setup
- Engaged directly with customers to customize products to their needs
- Supervised embedded programming of commercial product

Organic Photometrics, Santa Barbara, CA   JUN 2002 - SEP 2002
Product Development Engineer
- Led the development of new commercial testing equipment addressing the unique needs of organic LED developers
- Developed drivers for light spectrum/strength meters and power supply
- Integrated complex hardware sensors with a user-friendly interface

EDUCATION

- B.S. Computer Engineering (Honors), UC Santa Barbara 2004
- Technology Entrepreneurship Certificate, UC Santa Barbara 2004

AWARDS

- First place ($10,000) Start Cup 2004 Business Plan Competition
- UCSB's Regents Scholarship, Chancellors Award, Honors, Dean's Honors
- Tau Beta Pi: Engineering Honor Society

PAPERS AND PRESENTATIONS

- Baer, N., and Ahuja, J., "Protecting and Tracking Confidential Materials," Intellectual Property Today, May 2012.
- Baer, N. and Zeidman, B., "Measuring Whitespace Pattern Sequences as an Indication of Plagiarism," Journal of Software Engineering and Applications, 2012, April 2012.
- Shay, I., Baer, N., and Zeidman, R., "Measuring Whitespace Patterns in Computer Source Code as an Indication of Plagiarism," Intellectual Property Today, October 2010.
- Shay, I., Baer, N., and Zeidman, R., "Measuring Whitespace Patterns as an Indication of Plagiarism," ADFSL Conference on Digital Forensics, Security and Law, May 20, 2010.
- Baer, N. and Zeidman, B., "Measuring Changes in Software with CLOC," Embedded.com (www.embedded.com), July 28, 2009.
- Baer, N. and Zeidman, B., "Measuring Changes in Software IP," Intellectual Property Today, May 2009.
- Baer, N. and Zeidman, B., "Measuring Software Evolution with Changing Lines of Code," 24th International Conference on Computers and Their Applications (CATA-2009), April 10, 2009.
- Baer, N., "Discovering Software Trade Secret Theft," Silicon Valley CodeCamp, 11/2008

- Baer, N. and Zeidman, B., "What, Exactly, Is Software Trade Secret Theft?" Intellectual Property Today, March 2008.
- Baer, W., Baer, N., and Campbell, T., "Battlefield Visualization and Database Creation System Using One Meter Terrain," Proceedings of the ITEA Modeling and Simulation Workshop, 12/2005.

PATENTS

- Baer, N. and Baer, W., Interest-Attention Feedback System for Separating Cognitive Awareness into Different Left and Right Sensor Displays, U.S. Patent 9,805,612.
- Baer, N., Marini, F., Lodi, A., and Faetani, S., Portable Unit for Determining the Position With Respect to a Reference, Particularly for Substantially Shielded Environments, USPTO application number 11/282,832 and EPO application number 20050110937.

MEMBERSHIP

- Alumni aid officer, past-president, webmaster, and student advisor of the Northern California Scholarship Foundation (NCSF) Alumni Association
- IEEE, member
- Volunteer with the Lucile Packard Children's Hospital
- Volunteer with the Mid-Peninsula Boys & Girls Club

LITIGATION CONSULTING

2/2022 - present: Allscripts Healthcare, LLC, a North Carolina LLC, Health Grid Holding Company, LLC, Health Grid, LLC, Health Grid Coordinated Care Solutions, Inc., and Mahathi Software, LLC, v. Andor Health, LLC, a Delaware Corporation; Mahathi Software Pvt., Ltd.; Raj Toleti, individually and as Representative of the Participating Equity Holders the Merger Agreement; Paul Tyriver, individually; and Amar Bulsara, individually
Law Firm: Barnes & Thornburg
Client: Allscripts
Court: U.S. District Court, District of Delaware
Case: 1:21-CV-00704-MAK G
Alleged copying and reverse engineering

11/2021 – Present: BearBox LLC and Austin Storms v. Lancium LLC, Michael T. McNamara, and Raymond E. Cline, Jr.
Law Firm: Barnes & Thornburg
Client: Lancium LLC
Court: U.S. District Court, District of Delaware
Case: 1:21-cv-00534-MN-CJB
Alleged patent inventorship claims of cryptocurrency mining technology
Provided expert report
Testified in deposition

6/2021 – Present: The Chamberlain Group, Inc. v. Overhead Door Corporation, et al.
Law Firm: Latham & Watkins
Client: Overhead Door Corporation
Court: U.S. District Court, Eastern District of Texas, Marshall Division
Case: 2:21-CV-0084-JRG
Alleged patent infringement of garage door opener systems and components thereof
Provided expert report and declaration
Testified in deposition

4/2021 – Present: Delta T LLC, d/b/a Big Ass Fans v. MacroAir Technologies, Inc.
Law Firm: Vedder Price
Client: Delta T LLC, d/b/a Big Ass Fans
Court: U.S. District Court, Central District of California, Eastern Division
Case: 5:20-cv-00728-GW-GJS
Alleged patent infringement of fan systems
Provided expert report
Testified in deposition

1/2021 – 9/2021: Jaguar Land Rover Limited and Jaguar Land Rover North America, LLC, v. Dr. Ing. h.c. F. Porsche AG, Porsche Cars North America, Inc., Volkswagen AG, Volkswagen Group of America, Inc., Automobili Lamborghini S.p.A, Automobili Lamborghini America, LLC, Audi AG, and Audi of America, LLC
Law Firm: Latham & Watkins
Client: Jaguar Land Rover Limited and Jaguar Land Rover North America, LLC
Court: United States International Trade Commission
Investigation: 337-TA-1235
Alleged patent infringement certain vehicle control systems, vehicles containing the same, and components thereof
Provided expert report
Testified in deposition

2/2020 – Present: Masimo Corporation and Cercacor Laboratories, Inc., v. True Wearables, Inc. and Marcelo Lamego
Law Firm: Merchant & Gould, P.C.
Client: True Wearables, Inc. and Marcelo Lamego
Court: U.S. District Court, Central District of California, Southern Division
Case: 8:18-cv-2001-JVS-JDE
Alleged trade secret misappropriation
Provided expert declaration
Testified in deposition
Testified in trial

10/2020 – Present: AMO Development, LLC, AMO Manufacturing USA, LLC and AMO Sales and Service, Inc v. Alcon LenSx, Inc., Alcon Vision, LLC, Alcon Laboratories, Inc., and Alcon Research, LLC
Law Firm: Latham & Watkins
Client: AMO Development, LLC, AMO Manufacturing USA, LLC and AMO Sales and Service, Inc.
Court: U.S. District Court, District of Delaware
Case: 20-842 (CFC)
Alleged copyright infringement
Provided expert declaration and reports
Testified in deposition

12/2019 - Present: EcoFactor v. ecobee
Law Firm: Russ August & Kabat
Client: EcoFactor
Court: United States International Trade Commission
Investigation: 337-TA-1258
Alleged patent infringement of smart thermostats, smart HVAC systems, smart HVAC control systems, and components thereof

6/2019 – Present: LIION, LLC v. Vertiv Group Corporation, et al.
Law Firm: Benesch, Friedlander, Coplan & Aronoff LLP
Client: Vertiv Group Corporation, et al.
Court: U.S. District Court, Northern District of Illinois, Eastern Division
Case: 1:18-CV-06133
Alleged trade secret misappropriation

7/2019 – 3/2021: Neodron v. Samsung, Microsoft, Amazon, Lenovo, Motorola, Dell, and HP
Law Firm: Russ, August & Kabat
Client: Neodron Ltd
Forum: United States International Trade Commission
Investigation: 337-TA-1162
Alleged patent infringement of capacitive touch screens

6/2020 – 1/2021: In re: Tiktok, Inc.,
Law Firm: Freed Kanner London & Millen / Carlson Lynch
Client: Plaintiffs
Court: U.S. District Court, Northern District of Illinois, Eastern Division
Case: 20-cv-4699
Class action lawsuit

5/2019 – 5/2020: ECI Software Solutions. v. John Plyler Plumbing and Hardware, Olshan Lumber Company, Prosperity Computer Solutions, Greg Matatall, Wade Frazier, and Ed Baldridge
Law Firm: Lewis Brisbois Bisgaard & Smith LLP
Client: Prosperity Computer Solutions
Court: U.S. District Court, Northern District of Texas
Case: 3:18-cv-02758-S
Alleged copyright infringement and trade secret misappropriation

3/2019 – 5/2021: CallRail, Inc. v. PhoneWagon Inc. and Ryan Shank
Law Firm: Nelson Mullins Riley & Scarborough LLP
Client: CallRail, Inc.
Court: U.S. District Court, Northern District of Georgia, Atlanta Division
Case: 1:18-cv-02207-AT
Alleged copyright infringement

3/2019 – 5/2021: The County of Alameda v. Asif Ahsan
Law Firm: Summit Defense
Client: Asif Ahsan
Court: Superior Court of California, County of Alameda
Case: 154286
Provided expert report
Testified in trial

2/2019 – 9/2021: Overhead Door Corporation and GMI Holdings Inc. v. The Chamberlain Group, Inc.
Law Firm: Latham & Watkins
Client: Overhead Door Corporation and GMI Holdings Inc.
Forum: United States International Trade Commission
Investigation: 337-TA-1209
Alleged patent infringement of movable barrier operator systems and components thereof
Provided expert report
Testified in deposition
Testified in hearing

11/2018 – Present: ECIMOS, LLC v. Carrier Corporation
Court: U.S. District Court, Western District of Tennessee
Case: 2:15-CV-2726-JPM-cgc
Appointed by the Court as Special Master

2/2020 – 3/2021: Slingshot Printing LLC v. HP Inc.
Law Firm: Morgan, Lewis, Bockius LLP
Client: HP Inc.
Court: U.S. District Court, Western District of Texas
Case: 6:19-CV-00362, 00363, 00364, and 00549
Alleged patent infringement of printer components

8/2019 – 5/2020: O Web Technologies, LTD. v. Bloomin Brands, Inc.
Law Firm: GrayRobinson, P.A.
Client: Bloomin Brands, Inc.
Forum: American Arbitration Association
Investigation: 01-1-0001-0180
Alleged trade secret misappropriation
Contract dispute
Provided expert report
Testified in arbitration

9/2018 – 5/2019: CardioNet, LLC v. InfoBionic, Inc.
Law Firm: Latham & Watkins
Client: InfoBionic, Inc.
Forum: American Arbitration Association
Case: AAA Case No. 01-17-00044742
Alleged trade secret misappropriation
Provided expert report
Testified in deposition
Testified in arbitration

6/2018 – 7/2019: VKGS, LLC v. Planet Bingo, LLC, et al
Law Firm: Stinson Leonard Street LLP
Client: VKGS, LLC
Court: District Court of Douglas County, Nebraska
Case: CI 11-8953
Alleged trade secret misappropriation
Provided expert report
Testified in deposition
Testified in trial

4/2018 – 5/2018: The State of Missouri v. Eric Greitens
Attorney Office: St. Louis Circuit Attorney's Office
Client: The State of Missouri
Court: 22nd Judicial Circuit Court, Missouri
Case: 1822-CR00642
Alleged invasion of privacy

1/2018 – 9/2019: Video Gaming Technologies, Inc. v. Castle Hill Studios, LLC, et al
Law Firm: Saul Ewing Arnstein & Lehr LLP
Client: Castle Hill Studios
Court: U.S. District Court, Northern District of Oklahoma
Case: 17-cv-454-GKF-JF
Alleged trade secret misappropriation

10/2016 – 5/2018: One World Technologies, Inc. d/b/a Techtronic Industries Power Equipment v. The Chamberlain Group, Inc., Inter Partes Review
Law Firm: Morgan, Lewis & Bockius LLP
Client: One World Technologies, Inc.
Forum: Patent Trial and Appeal Board (PTAB)
Proceeding: IPR2017-00214
Inter partes review
Provided expert report
Testified in deposition

12/2017 – 9/2018: Uchytil Ex Rel. U.S. v. Avanade Inc et al
Law Firm: Lowe Graham Jones, PLLC
Client: Uchytil Ex Rel. U.S.
Court: U.S. District Court, Western District Washington, Seattle
Case: C12-2091-JCC
Alleged fraud in procurement of government contracts

12/2016 – 9/2019: Papst Licensing v. Apple, LG Electronics, ZTE Corporation, Samsung Electronics, Lenovo, Motorola Mobility, Huawei Technologies
Law Firm: DiNovo Price Ellwanger
Client: Papst Licensing
Court: U.S. District Court, Eastern District of Texas, Tyler Division
Case: 6:15-CV-1095
Alleged patent infringement of mobile phones

9/2016 – 10/2016: CSS v. Christopher Herrington, Gene Yoho and Compiled Technologies
Law Firm: Robinson & McElwee
Client: Christopher Herrington, Gene Yoho and Compiled Technologies
Court: U.S. District Court, Southern District of West Virginia, Charleston Division
Case: 2:16-CV-01762
Alleged copyright infringement

8/2016 – 1/2020: Optumsoft, Inc. v. Arista Networks, Inc.
Law Firm: Latham & Watkins
Client: Arista Networks, Inc.
Location: Santa Clara County Superior Court
Case: 1-14-CV-263257
Alleged breach of license agreement and trade secret misappropriation

1/2016 – 6/2016: Verasonics v. Alpinion Medical Systems
Law Firm: Davis Wright Tremaine
Client: Verasonics
Location: American Arbitration Association, International Centre for Dispute Resolution
Case: 01-15-0002-9484
Alleged trade secret misappropriation

12/2015 – 2/2017: ACI Worldwide v. MasterCard Technologies
Law Firm: Faegre Baker Daniels; Robins Kaplan
Client: ACI Worldwide
Court: U.S. District Court, District of Nebraska
Case: 8:14-CV-00031
Alleged trade secret misappropriation

11/2015 – 2/2016: SalesForceOne LLC. v. Salesforce.com, Inc.
Law Firm: Wilson Sonsini Goodrich & Rosati
Client: Salesforce.com, Inc.
Court: U.S. District Court, Northern District of California
Case: 4:2015-CV-02174
Alleged trademark infringement

2/2015 – 1/2016: NNG, Kft. v. Ava Enterprises, Inc.
Law Firm: Lewis Roca Rothgerber Christie LLP
Client: NNG, Kft
Court: U.S. District Court, Central District of California
Case: 2:2014-CV-00220
Alleged copyright infringement

10/2014 – 4/2018: ObjectiVision v. Visionsearch Pty Ltd and University of Sydney
Law Firm: K&L Gates / Marque Lawyers / Allens
Client: ObjectiVision
Court: Federal Court of Australia
Case: NSD 385 of 2014
Alleged copyright infringement

10/2014 – 1/2016: Cross Mediaworks, LLC and Telamerica Media, LLC v. EMT Holdings, LLC and EMT & S Incorporated
Law Firm: Maxwell & Anderson, LLC
Client: EMT Holdings, LLC
Court: U.S. District Court, Southern District of New York
Case: 14 Civ. 561 (VSB)
Alleged trade secret misappropriation
Testified in deposition
Testified at a hearing

9/2015 - 12/2015: Good Technology Corporation et al v. MobileIron, Inc.
Law Firm: Orrick, Herrington & Sutcliffe LLP.
Client: MobileIron, Inc.
Court: U.S. District Court, District of Delaware
Case: 1:14-CV-01308-LPS-CJB
Alleged patent infringement of mobile device management

10/2014 - 12/2015: Good Technology Corporation et al v. Airwatch, LLC
Law Firm: Kilpatrick, Townsend, & Stockton LLP.
Client: Airwatch, LLC
Court: U.S. District Court, California Central District Court
Case: CV12-05827-EJD
Alleged patent infringement of mobile device management

10/2014 - 8/2015: Good Technology Corporation et al v. MobileIron, Inc.
Law Firm: Orrick, Herrington & Sutcliffe LLP.
Client: MobileIron, Inc.
Court: U.S. District Court, Northern District of California, San Jose Division
Case: CV12-05826-EJD
Alleged patent infringement of mobile device management

11/2014 - 8/2015: Allure Energy Inc. v. Nest Labs, Inc. et al
Law Firm: White and Case LLP
Client: Nest Labs, Inc.
Court: U.S. District Court, Eastern District of Texas
Case: 9:13-CV-102
Alleged patent infringement of smart thermostats
Provided expert report
Testified in deposition

6/2014 - 10/2016: Delphix Corp. v. Actifio, Inc.
Law Firm: Latham & Watkins
Client: Actifio, Inc.
Court: U.S. District Court, California Northern District Court
Case: 5:14-CV-04613-BLF, 5:14-CV-01047
Alleged patent infringement of data management

1/2014 - 3/2015: Trebro Manufacturing v. Firefly Equipment et al
Law Firm: Antoinette M. Tease, P.L.L.C.
Client: Trebro Manufacturing
Court: U.S. District Court, Montana District Court, Billings Division
Case: CV -13-36-BLG-SEH
Alleged copyright infringement
Provided expert report
Testified in deposition

12/2013 – 12/2016: InfoSpan Inc et all v. Emirates NBD Bank PJSC
Law Firm: Latham & Watkins
Client: Emirates NBD Bank PJSC
Court: U.S. District Court, California Central District Court
Case: 8:2011cv01062
Alleged copyright infringement and trade secret misappropriation
Provided expert report
Testified in deposition

6/2013-1/2014: Cellebrite Mobile Synchronization v. Micro Systemation
Law Firm: Pearl Cohen Zedek Latzer Baratz LLP
Client: Cellebrite Mobile Synchronization
Court: U.S. District Court, Virginia Eastern District Court, Alexandria Division
Case: 1:13-CV-01014
Alleged copyright infringement and trade secret misappropriation

2/2013 – 5/2017: Metropolitan Health Corporate v. Neil Harvey Associates
Law Firm: Attorneys Zumpt and Kritzinger & Co
Client: Metropolitan Health Corporate
Court: Western Cape High Court, Cape Town, South Africa
Case: 10264/2010
Alleged copyright infringement

1/2012-7/2013: Robin Antonick v. Electronic Arts
Law Firm: Keker & Van Nest LLP
Client: Electronic Arts
Court: U.S. District Court, Northern District of California
Case: 3:11-CV-01543
Alleged copyright infringement

1/2012-6/2012: ThinkOptics v. Nintendo of America, et al.
Law Firm: Nix Patteron & Roach LLP
Client: ThinkOptics
Court: U.S. District Court, Eastern District of Texas
Case: 6:2011CV00454
Alleged patent infringement of handheld controllers

1/2012-6/2012: E-Micro Corporation v. Google, et al.
Law Firm: Nix Patteron & Roach LLP
Client: E-Micro
Court: U.S. District Court, Eastern District of Texas
Case: 6:11-CV-465
Alleged patent infringement of mobile payment

8/2011-6/2012: Bally Technologies, Inc. v. Business Intelligence Systems Solutions
Law Firm: Morgan, Lewis, Bockius LLP
Client: Business Intelligence Systems Solutions
Court: U.S. District Court, District of Nevada
Case: 2:2010cv00440
Alleged patent infringement of data visualization system
Provided expert report
Testified in deposition

4/2011-6/2012: Motorola Mobility v. Microsoft
Law Firm: Sidley Austin
Client: Microsoft
Court: U.S District Court, Southern District of Florida
Case: 1:10-CV-2406J
Alleged patent infringement of voice processing

4/2010 – 8/2012: Brocade v. A10 Networks
Law Firm: Orrick, Herrington & Sutcliffe and McDermott, Will & Emery
Client: Brocade
Court: U.S. District Court, Northern District of California, San Jose Division
Case: C 10-03428 LHK (PSG)
Alleged copyright infringement

8/2010 – 3/2011: Cross Match Technologies v. Suprema and Mentalix
Law Firm: Latham & Watkins
Client: Cross Match Technologies
Forum: United States International Trade Commission
Investigation: 337-TA-720
Alleged patent infringement of fingerprint scanning software

3/2010 – 9/2010: Datamaxx v. Computer Products of Illinois
Law Firm: Ausley & McMullen
Client: Computer Products of Illinois
Court: U.S. District Court, Northern District of Florida, Tallahassee Division
Case: 4:09CV435-RH/WCS
Alleged copyright infringement

2/2010 – 7/2010: SplitFish v. Bannco
Law Firm: Finnegan, Henderson, Farabow, Garrett & Dunner, LLP
Client: SplitFish
Court: U.S. District Court, Northern Easter District of Virginia, Alexandria Division
Case: l:10CV297
Alleged copyright infringement

10/2009-11/2009: Sigma Six Technologies and Sigma Six Consulting. v. Nagarro and T-Systems
Enterprise Services.
Law Firm: Ropers, Majeski, Kohn & Bentley PC
Client: Nagarro
Court: U.S. District Court, Northern District of California, San Jose Division
Case: C 08-05633 JW
Alleged trade secret misappropriation
Provided expert report

8/2009 – 11/2010: Zynga v. Green Patch
Law Firm: Quinn Emanuel Urquhart & Sullivan
Client: Zynga
Court: U.S. District Court, Northern District of California
Case: CV-09-3636 SC (EMC)
Alleged copyright infringement

8/2009 – 12/2009: De Lage Landen Operational Services v. Third Pillar Systems
Law Firm: Wilson Sonsini Goodrich & Rosati
Client: Third Pillar Systems
Court: U.S. District Court, Eastern District of Pennsylvania
Case: 09-cv-02439-HB
Alleged trade secret misappropriation

3/2009 – 2/2011: Financial Systems Technology v. Oracle Corporation
Law Firm: Orrick, Herrington & Sutcliffe
Client: Oracle
Court: U.S. District Court, Eastern District of Texas
Case: 2:08-CV-371
Alleged patent infringement

2/2009 – 10/2009: Minden Schipper & Associates v. Cancercare Manitoba (Varian Medical Systems)
Client: Varian Medical Systems
Court: Queen's Bench, Winnipeg Centre, Canada
Case: CI 05-01-45377
Alleged copyright infringement

11/2008 – 1/2010: Applied Materials v. Advanced Micro-Fabrication Equipment Co.
Law Firm: Goodwin Procter
Client: Applied Materials
Court: U.S. District Court, Northern District of California
Case: C07 05248 JW (PVT)
Alleged copyright infringement

9/2008 – 3/2010: Personnel Department v. CareerBuilder
Law Firm: Jones, Day, Reavis & Pogue
Client: CareerBuilder
Court: U.S. District Court, District of Vermont
Case: 2:08-CV-59-wks
Alleged trade secret misappropriation

9/2008 – 9/2009: Abanco Investments LLC v. GuestLogix Inc.
Law Firm: Patterson, Thuente, Skaar & Christensen
Client: GuestLogix
Court: U.S. District Court, Northern District of Illinois
Case: 07 C 1071
Alleged trade secret misappropriation

7/2008-10/2008: Facebook, Inc. v. StudiVZ Ltd.
Law Firm: Orrick, Herrington & Sutcliffe
Client: Facebook
Court: U.S. District Court, Northern District of California
Case: 5:08-CV-03468 JF
Alleged copyright infringement

4/2008 – 12/2010: Esbin & Alter v. Zappier, et al.
Law Firm: Alter & Alter
Client: Esbin & Alter
Court: U.S. District Court, Southern District of New York
Case: 08 Civ. 313
Contract dispute

04/2008 – 11/2008: Intelligraphics, Inc. v. Marvell Semiconductor, Inc.
Law Firm: Sommers and Schwartz
Client: Intelligraphics
Court: U.S. District Court, Northern District of California – San Francisco Division
Case number: C-07-2499 JCS
Contract dispute

03/2008 – 08/2008: Carl Zeiss Meditec v. Optovue
Law Firm: Nixon Peabody
Client: Carl Zeiss Meditec
Court: U.S. District Court, Northern District of California - Oakland Division
Case number: C 07-03010 CW
Alleged copyright infringement and trade secret misappropriation

2/2008 – 7/2008: Symantec v. Commissioner of Internal Revenue
Law Firm: Baker & McKenzie
Client: Symantec
Court: US Tax Court
Case: 12075-06
Software tax dispute

08/2006 – 08/2007: AdTech RFID v. Adept Identification Technologies
Law Firm: Wilson Sonsini Goodrich & Rosati
Client: Adept Identification Technologies
Court: Santa Clara County Superior Court
Case: 1-06-CV-057464
Alleged trade secret misappropriation

ATTACHMENT B

Resume of Steven B. Leeb
Office Address: MIT Room 10-069, Cambridge, MA 02139, (617) 253-9360

Education:

Ph.D. degree, Massachusetts Institute of Technology, 1993
E.E. degree, Massachusetts Institute of Technology, 1990
S.M. degree, Massachusetts Institute of Technology, 1989
S.B. degree, Massachusetts Institute of Technology, 1987

Experience:

Joint Appointment, MIT Department of Mechanical Engineering
MacVicar Professor of Electrical Engineering and Computer Science, Massachusetts Institute of Technology 2005 – Present
      (Classes taught include: Feedback Control Systems, Signals and Systems, Circuits, Advanced Mechatronics Project Laboratory, Fields and Forces, Introduction to Power Systems, Motor Design)
Associate Professor of Electrical Engineering, Massachusetts Institute of Technology 1997 – June 2005
Assistant Professor of Electrical Engineering, Massachusetts Institute of Technology 1993—1997
Lieutenant, U.S. Air Force Reserve, Wright Research and Development Center, Microelectronics Branch (part time) 1987—1991

Legal Consulting with Trial/Deposition/Report:

Lynch, Brewer, Hoffman, and Sands, 101 Federal Street, Boston, Massachusetts, beginning January 1998,
    Cyberstorage vs. Trimm, Massachusetts District Court, Deposition, Expert Reports, Trial Testimony. (1:97-cv-12369)
Fish and Neave, 1251 Avenue of the Americas , New York, NY, beginning August 2001,
    VLT vs. Lucent/Tyco, Massachusetts District Court, Expert Report, Hearing Testimony.
    Tyco vs. Power One (product examination, claim review).
Synqor vs. Ericson, Boxborough, MA, Massachusetts District Court, 2001/2002, Expert Report
Vinson and Elkins, 2001 Ross Avenue, Dallas, Texas, beginning August 2003,
    Genlyte vs. Lutron, District Court, Expert Reports, Deposition, Trial Testimony.
Latham and Watkins, LLP, 633 W. 5th street, Suite 4000, Los Angeles, CA, beginning August 2004,
    Linear Technology vs. Monolithic
Wilson, Sonsini, Goodrich and Rosati, 650 Page Mill Road, Palo Alto, CA beginning September 2004,
    LeapFrog vs. Fisher-Price
Lutron, 7200 Suter Road, Coopersburg, Pennsylvania, beginning September 2004 (in-house),
    German Patent Application
Vinson and Elkins, 2001 Ross Avenue, Dallas, Texas, beginning July 2005,
    Lutron vs. Leviton, U.S. District Court, Eastern Pennsylvania.
McDermott, Will, and Emery, beginning December 2005,
    Nilssen versus Wal-Mart Stores, et.al., No. 04-C-5363
WilmerHale, beginning January 2007,
    Analog Devices versus Linear Technology Corporation

Vinson and Elkins, 2001 Ross Avenue, Dallas, Texas, beginning January 2007,
    Lutron Electronics Co., Inc. versus Leviton Manufacturing Co., Inc.
Sidley Austin, LLP, One South Dearborn, Chicago, Illinois, beginning February 2008,
    Synqor vs. Artesyn et.al., Eastern District, Texas, Expert Reports, Deposition, Trial
    Testimony.
Vinson and Elkins, 2001 Ross Avenue, Dallas, Texas, beginning April 2008,
    Lutron Electronics Co., Inc. versus C4 , Deposition, Expert Report
Vinson and Elkins, 2001 Ross Avenue, Dallas, Texas, beginning August 2010,
    Lutron Electronics Co., Inc. versus Crestron, et.al. (Case 2:09-cv-707)
Sidley Austin, LLP, One South Dearborn, Chicago, Illinois, beginning January 2011,
    Synqor vs. Lineage., Eastern District, Texas, Declarations, Reports, Depo/Trial Testimony
Sidley Austin, LLP, One South Dearborn, Chicago, Illinois, 2011
    Synqor vs. Cisco, et. al.., Eastern District, Texas, Declarations, Depo/Testimony (2:14-CV-
    00232, 2:14-CV-286, 2:11-cv-54-TJW-CD)
Sidley Austin, LLP, One South Dearborn, Chicago, Illinois, 2011
    Synqor vs. Vicor, Eastern District, Texas, Declarations, Depo/Testimony (2:14-CV-287)
McDermott, Will, and Emery, beginning February 2012,
    Power Integrations Inc. v. Fairchild Semiconductor Int'l, Inc., et. al.,
        (No.: 5:09-CV-05235-JW)
Baker Botts, beginning January 2013
    Volterra v. Infineon, et. al. USPTO Re-exam declaration.
Woodcock Washburn, LLP, beginning February 2013
    USPTO Re-examination of US 8,111,008, US 7,619,539, Declarations.
Duane Morris, LLP, beginning February 2014
    USPTO Re-examination of US 5,905,442, Declaration, Interview.
McDermott, Will, and Emery, beginning June 2015,
    Network-1 v. Alcatel-Lucent et.al., 6:11-cv-492-LED
Day Pitney LLP, March-April 2016
    Philips v. Amerlux, CV 1:15-cv-13086-LTS, and USPTO proceedings
WilmerHale, starting December 2016
    R2 v. Intel, (ITC Inv. No. 337-TA-1024 and 2:16-CV-1011-RWS (EDTX)), IPR filings
WilmerHale, starting December April 2017
    Nokia v. Apple, (Inv. No. 337-TA-1039)
Kirkland & Ellis, LLP, starting August 2017
    Fundamental Innovation Systems International LLC v. Samsung et.al.,
        Case No. 2:17-cv-00145, Eastern District of Texas.
Kirkland & Ellis, LLP, starting September 2017
    Avaya Inc., et. al., Case No. 17-10089, Southern District of New York
Paul Hastings, starting March 2019
    IPR's for Samsung (vs. NuCurrent), USPTO
Finnegan, Henderson, Farabow, Garrett, & Dunner, LLP, starting May 2019
    Asetek Danmark A/S v. CoolIT, Case No. 3:19-cv-00410-EMC
WilmerHale, starting August 2019
    VLSI Technology, LLC v. Intel, (W.D. Texas Case Nos. 19-254, -255, -256-ADA) reports,
    deposition, trial testimony.
Latham & Watkins, starting December 2019
    Technical expert. Chamberlain v. OHD, 2:21-cv-00084 ED Texas, reports, deposition
Latham & Watkins, starting April 2020
    Technical expert. Civil Action No. 1:20-cv-393 (ED Va) and ITC "In the matter of certain
    tobacco heating articles and components thereof." (INV.NO. 337-TA-1199)
Carter Arnett, PLLC, starting June 2020

Technical expert. Case No. 4:20-cv-234 (ED TX)
Brian Cave Leighton Paisner LLP, starting February 2021
    Technical expert. Case No. 4:16-cv-0399-JAR and 4:13-cv-01895-SEP (ED Missouri)
    (Nidec Motor Corporation v. Broad Ocean Motor Co. Ltd et.al.)
Quinn Emanuel, starting December 2021
    Technical expert. Cases: Inv. No. 337-TA-1285; Civil Action No. 6:21-cv-01008-ADA;
    Civil Action No. 6:21-cv-01010-ADA
Cozen O'Connor, starting February 2022
    Technical expert. IPR US 7,382,103; 1:22-cv-10090-MPK
Latham & Watkins, starting September 2022
    Technical expert. Overhead Door in ITC proceedings.

Sample Technical Consulting (not exhaustive):

Lutron Electronics Co., Inc., beginning in 2009
NEMOmetrics, beginning in 2010
U.S. Department of Energy, 2011
Talking Lights, LLC, 1340 Soldiers Field Rd, Massachusetts, beginning December 1998
EPRI-PEAC, 942 Corridor Park Blvd., Knoxville, TN, beginning August 2003

Honors:
AT&T New Ventures Grant 1993
MIT Leader's for Manufacturing Program Junior Faculty Fellow 1993—1996
Spira Teaching Award 1996
Bose Teaching Award 1997
Edgerton Faculty Award 1998
Technology Review's TR100 Outstanding Young Innovator 1999
IEEE Outstanding Young Power Electronics Engineer 1999
R&D 100 Award, 2000
IEEE Senior Member, 2001
R&D 100 Award, 2002
MIT MacVicar Fellow, 2004
Eta Kappa Nu EECS Undergraduate Teaching Award, 2006
IEEE Fellow, 2007
Bose Faculty Award 2013

Sample Publications (not exhaustive):

    Papers in Refereed Journals

1. Leeb, S.B., J.L. Kirtley, Jr., and G.C. Verghese, "Recognition of Dynamic Patterns in DC-DC Switching Converters," *IEEE Transactions on Power Electronics* Volume 6, Number 2, pp. 296-302, April 1991 (also appeared in *IEEE Power Electronics Specialists Conference*, 1989).
2. White, J., and S.B. Leeb, "An Envelope--Following Approach to Switching Power Converter Simulation," *IEEE Transactions on Power Electronics*, Volume 6, Number 2, pp. 303-307 April 1991.

3. Leeb, S.B., J.L. Kirtley, Jr., D.S. Woodruff, and M.S. Le Van, "Building-Level Power Network Analysis," *IEEE Computer Applications in Power*, Volume 5, Number 1, pp. 30-35, January 1992.

4. Karl, W.C., S.B. Leeb, L.A. Jones, J.L. Kirtley, Jr., and G.C. Verghese, "Applications of Rank-Based Filters in Power Electronics," *IEEE Transactions on Power Electronics*, Volume 7, Number 3, pp. 437-444, July 1992.

5. Leeb, S.B., S.R. Shaw, J.L. Kirtley, Jr., "Transient Event Detection in Spectral Envelope Estimates for Nonintrusive Load Monitoring," *IEEE Transactions on Power Delivery*, Volume 10, Number 3, pp. 1200-1210, July 1995 (also Paper 95 WM 042-2-PWRD *IEEE PES Winter Meeting*, New York, NY, January, 1995).

6. Eissa, M.O., S.B. Leeb, G.C. Verghese, and A.M. Stankovic, "Fast Analog Control for a Power Factor Correcting Converter,"*IEEE Transactions on Power Electronics*, Volume 11, Number 1, pp. 1-6, January 1996.

7. Norford, L.K., S.B. Leeb, "Non-Intrusive Electrical Load Monitoring in Commercial Buildings Based on Steady State and Transient Load-Detection Algorithms," *Energy and Buildings*, Volume 24, pp. 51-64, 1996.

8. Mitwalli, A.H., S.B. Leeb, G.C. Verghese, and V.J. Thottuvelil, "An Adaptive Digital Controller for a Unity Power Factor Converter," *IEEE Transactions on Power Electronics*, Volume 11, Number 2, pp. 374-382, March 1996.

9. Khan, U.A., S.B. Leeb, M.C. Lee, "A Multiprocessor for Transient Event Detection," *IEEE Transactions on Power Delivery*, Volume 12, Number 1, pp. 51--60, January 1997 (also Paper 96 SM 520-7 PWRD *IEEE PES Summer Meeting*, Denver, CO, July, 1996).

10. Jackson, D.K., S.B. Leeb, A.H. Mitwalli, P. Narvaez, D. Fusco, E.C. Lupton, "Power Electronic Drives for Magnetically Triggered Gels," *IEEE Transactions on Industrial Electronics*, Volume 44, Number 2, pp. 217--225, April 1997.

11. Leeb, S.B., A.Ortiz, R.F. Lepard, S.R. Shaw, and J.L. Kirtley, Jr., "Applications of Real-Time Median Filtering with Fast Digital and Analog Sorters," *IEEE Transaction on Mechatronics*, Volume 2, Number 2, pp. 136--143, June 1997.

12. Jackson, D.K., A.M. Schultz, S.B. Leeb, A.H. Mitwalli, and G.C. Verghese, "A Multirate Digital Controller for a 1.5kW Electric Vehicle Battery Charger," *IEEE Transactions on Power Electronics*, Volume 12, Number 6, pp. 1000--1006, November 1997.

13. Jackson, D.K., C. Wang, S.B. Leeb, T. Tanaka, A. Mitwalli, and D. Fusco, "A Sensor for Measuring Gel Phase-Transition Temperature, with Potential as a Metal Ion Detector," *Journal of Intelligent Material Systems and Structures*, Volume 8, Number 2, February 1997, pp. 184--190.

14. Mitwalli, A.H., T. Denison, D.K. Jackson, S.B. Leeb, T. Tanaka, "Closed-Loop Feedback Control of Magnetically-Activated Gels," *Journal of Intelligent Material Systems and Structures*, Volume 8, Number 7, July 1997, pp. 596--604.

15. Jackson, D.K., T.K. Buffaloe, and S.B. Leeb, "*Fiat Lux:* A Fluorescent Lamp Digital Transceiver," *IEEE Transactions on Industry Applications*, Volume 34, Number 3, May--June 1998, pp. 625--630.

16. Shaw, S.R., C.B. Abler, R.F. Lepard, D. Luo, S.B. Leeb, and L.K. Norford, "Instrumentation for High Peformance Nonintrusive Electrical Load Monitoring," *ASME Journal of Solar Energy Engineering*, Vol. 120, No. 3, August 1998, pp. 224--229.

17. Shaw, S.R., S.B. Leeb, "Identification of Induction Motor Parameters from Transient Stator Current Measurements," *IEEE Transactions on Industrial Electronics*, Volume 46, No. 1, February 1999, pp. 139--149.

18. Shaw, S.R., R.F. Lepard, S.B. Leeb, and C.R. Laughman, "A Power Quality Prediction System," *IEEE Transactions on Industrial Electronics*, Volume 47, No. 3, June 2000, pp. 511--517.

19. Jackson, D.K., S.B. Leeb, S.R. Shaw, "Adaptive Control of Power Electronic Drives for Servomechanical Systems," *IEEE Transactions on Power Electronics,* Volume 15, No. 6, November 2000, pp. 1045--1055.

20. Burke, D.T., S.B. Leeb, R.T. Hinman, E.C. Lupton, J. Burke, J.C. Schneider, B. Ahangar, K. Simpson, E.A.K. Mayer, "Using Talking Lights to Assist Brain-Injured Patients with Daily Inpatient Therapeutic Schedule," *The Journal of Head Trauma Rehabilitation,* Volume 16, No. 3, June 2001, pp. 284--291.

21. Shaw, S.R., D. Luo, L.K. Norford, S.B. Leeb, "Detection of HVAC Faults via Electrical Load Monitoring," *International Journal of HVAC&R Research,* Volume 8, No. 1, January 2002, pp. 13--40.

22. D. Luo, L.K. Norford, S.R. Shaw, S.B. Leeb, "Monitoring HVAC Equipment Electrical Loads from a Centralized Location -- Methods and Field Test Results," *ASHRAE Transactions,* Volume 108, Part 1, January 2002.

23. Jackson, D.K., S.B. Leeb, "A Digitally Controlled Amplifier with Ripple Cancellation," *IEEE Transactions on Power Electronics, Special Issue on Digital Control,* Volume 18, Number 1, Part 2, January 2003, pp. 486-494.

24. Hinman, R.T., E.C. Lupton, S.B. Leeb, A. Avestruz, R. Gilmore, D. Paul, and N. Peterson, "Using Talking Lights Illumination Networks to Enhance Word Comprehension by Subjects who are Deaf or Hard-of-Hearing," *American Journal of Audiology,* January 2003.

25. Shaw, S.R., M. Keppler, S.B. Leeb, "Pre-Estimation for Better Initial Guesses," *IEEE Transactions on Instrumentation and Measurement, Volume 53, No. 3,* June 2004, pp. 762-769.

26. Cooley, J., A. Avestruz, S.B. Leeb, "Small-signal analysis of fully-differential closed-loop op-amp circuits with arbitrary external impedance elements," IET Circuits, Devices, & Systems, Vol., 5, Issue 5, 2011, pp. 371-383.

27. Avestruz, A., J. Cooley, D. Vickery, J. Paris, S.B. Leeb, "Dimmable Solid-State Ballast with Integral Capacitive Occupancy Sensor," IEEE IES Transactions, Volume 59, No. 4, April 2012, pp. 1739-1750.

28. Banerjee, Arijit, M. Tomovich, S. Leeb, J. Kirtley, "Control Architecture for a Switched Doubly-fed Machine Propulsion Drive," IEEE *Industry Applications Society Transactions,* Vo. 51, No. 2, March-April 2015, pp. 1538-1550.

29. Banerjee, Arijit, A.H. Chang, K. Suarkitbovorn, S. Leeb, J. Kirtley, "Bumpless Automatic Transfer for a Switched Doubly-Fed Machine Propulsion Drive," IEEE *Industry Applications Society Transactions,* Vo. 51, No. 4, July-August 2015, pp. 3147-3158.

30. C. Schantz, S.B. Leeb, "Self-sensing Induction Motors for Condition Monitoring," *IEEE Sensors Journal,* Vol. 17, No.12, 2017, pp.3735-3743.

31. Orji, U., C. Schantz, S.B. Leeb, J.L. Kirtley, B. Sievenpiper, K. Gerhard, T. McCoy, "Adaptive Zonal Protection for Ring Microgrids," *IEEE Transactions on Smart Grid,* Vol. No., 2017, pp. 1-9.

32. J. Donnal, P. Lindahl, D. Lawrence, R. Zachar, S.B. Leeb, "Untangling Non-Contact Power Monitoring Puzzles," *IEEE Sensors Journal,* Vol. 17, No.11, 2017, pp.3542-3550.

33. C. Schantz, S.B. Leeb, "Self-sensing Induction Motors for Condition Monitoring," *IEEE Sensors Journal,* Vol. 17, No.12, 2017, pp.3735-3743.

34. Lindahl, P., G. Bredariol, J. Donnal, S.B. Leeb, "Noncontact Electrical System Monitoring on a U.S. Coast Guard Cutter," *IEEE Instrumentation and Measurement Magazine,* Vol. 20, Issue 4, 2017, pages 11-20.

35. J. Moon and S. B. Leeb, "Wire Less Sensors for Electromechanical Systems Diagnostics," in *IEEE Transactions on Instrumentation and Measurement*, vol. 67, no. 9, pp. 2235-2246, Sept. 2018.
36. A. Aboulian, J. S. Donnal and S. B. Leeb, "Autonomous Calibration of Non-Contact Power Monitors," in *IEEE Sensors Journal*, vol. 18, no. 13, pp. 5376-5385, 1 July 1, 2018.
37. P. A. Lindahl, D. H. Green, G. Bredariol, A. Aboulian, J. S. Donnal and S. B. Leeb, "Shipboard Fault Detection Through Nonintrusive Load Monitoring: A Case Study," in *IEEE Sensors Journal*, vol. 18, no. 21, pp. 8986-8995, 1 Nov.1, 2018.
38. P. A. Lindahl, S. R. Shaw and S. B. Leeb, "Fuel Cell Stack Emulation for Cell and Hardware-in-the-Loop Testing," in *IEEE Transactions on Instrumentation and Measurement*, vol. 67, no. 9, pp. 2143-2152, Sept. 2018.
39. A. Aboulian *et al.*, "NILM Dashboard: A Power System Monitor for Electromechanical Equipment Diagnostics," in *IEEE Transactions on Industrial Informatics*, vol. 15, no. 3, pp. 1405-1414, March 2019.
40. K. Lee, L. Huchel, D. H. Green and S. B. Leeb, "Automatic Power Frequency Rejection Instrumentation for Nonintrusive Frequency Signature Tracking," in *IEEE Transactions on Instrumentation and Measurement*, vol. 70, pp. 1-11, 2021, Art no. 3500311, doi: 10.1109/TIM.2020.3009339.
41. M. Gutierrez, P. Lindahl and S. B. Leeb, "Constant Power Load Modeling for a Programmable Impedance Control Strategy," in IEEE Transactions on Industrial Electronics, doi: 10.1109/TIE.2020.3048323.
42. Ł. Huchel, T. C. Krause, S. B. Leeb and J. Helsen, "Stretched Sensing Strategies for IEPE," in *IEEE Transactions on Instrumentation and Measurement*, vol. 70, pp. 1-10, 2021, Art no. 2003210, doi: 10.1109/TIM.2021.3056753.
43. Ł. Huchel, T. C. Krause, T. Ługowski, S. B. Leeb and J. Helsen, "Chasing the Cut: A Measurement Approach for Machine Tool Condition Monitoring," in IEEE Transactions on Instrumentation and Measurement, vol. 70, pp. 1-10, 2021, Art no. 3509610, doi: 10.1109/TIM.2020.3047939.

Proceedings in Refereed Conferences

1. W.C. Karl, S.B. Leeb, L.A. Jones, J.L. Kirtley, Jr., and G.C. Verghese, "Applications of a Class of Nonlinear Filters to Problems in Power Electronics," *IEEE Power Electronics Specialists Conference*, San Antonio, TX, June 1990, pp. 35-42.
2. Leeb, S.B., A. Ortiz, and J.L. Kirtley, Jr., "Real-Time Median Filtering with a Fast Hardware Sorter," *Applied Power Electronics Conference*, Dallas, TX, pp. 254-260, March 1991.
3. Silveira, L.M., J. White, and S.B. Leeb, "A Modified Envelope-Following Approach to Clocked Analog Circuit Simulation," *IEEE ICCAD*, November 1991.
4. Mitwalli, A.H., S.B. Leeb, G.C. Verghese, and V.J. Thottuvelil, " A Digital Controller for a Unity Power Factor Power Converter," *Proceeding of the IEEE Workshop on Computers in Power Electronics*, Berkeley, California, August 1992.
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Best Available Summary of Dr. Leeb's Expert Witness Experience

Case	Retained by	Law Firm
SynQor Inc. v. Vicor Corporation, 2:14-cv-00287 (E.D.Tex. 2012)	SynQor	Sidley Austin
Certain Lighting Control Devices Including dinner Switches and/or Switches and Parts Thereof, Inv. No. 337-TA-599	Complainant, Lutron	Vinson & Elkins
Certain Liquid Crystal Display Devices, Including Monitors, Televisions, and Modules, and Components Thereof, Inv. No. 337-TA-749C	Complainant Thomson Licensing	Kirkland & Ellis LLP
Certain Voltage Regulator Circuits, Components Thereof and Products Containing Same, Inv. No. 337-TA-521	Respondent Monolithic Power Systems	Latham & Watkins
Cyberstorage Systems, et al v. Trimm Technologies, 1:97-cv-12369 (D. Mass. 1997)	Cyberstorage	Lynch, Brewer, Hoffman, and Sands
VLT, Inc. v. Lucent Technologies Inc. et al., 1:07-cv-10047 (D. Mass. 2007)	Lucent Technologies	Fish and Neave
Synqor, Inc. v. Ericsson, Inc., 1:02-cv-11240 (D. Mass. 2002)	SynQor	N/A – In house
Lutron Electronics Co., Inc. v. Genlyte Thomas Group LLC., 2:03-cv-02702 (E.D. Pa. 2003)	Lutron	Vinson and Elkins
Linear Technology Corp., v. Monolithic Power Systems Inc., 06–476 (D. Del. 2006)	Monolithic	Latham and Watkins
LeapFrogEnterprises v. Fisher-Price and Mattel, Inc., 06-1402 (Cir.)	LeapFrog	Wilson, Sonsini, Goodrich and Rosati
Lutron Electronics Co., Inc., v. Leviton Manufacturing Co., Inc., 9:07-CV-43 (E.D. Tex. 2007)	Lutron	Vinson and Elkins
Nilssen, et al. v. Wal-Mart Stores Inc., et al., 04-cv-5363 (N.D. Ill. 2004)	Wal-Mart	McDermott, Will, and Emery
Analog Devices Inc. v. Linear Technology Corp., 06-cv-00346 (D. Del. 2006)	Analog Devices	WilmerHale
Lutron Electronics Co., Inc. v. Leviton Manufacturing Co., Inc., 9:07-cv-00043 (E.D. Tex. 2007)	Lutron	Vinson and Elkins
Synqor Inc. vs. Artesyn Technologies et.al., 2:07-cv-00497,(E.D.Tex. 2011)	SynQor	Sidley Austin
Lutron Electronics Co., Inc. v.Control4Corp., 2:06–CV–00401 (D.	Lutron	Vinson and Elkins

Utah 2006)		
Lutron Electronics Co., Inc. versus Crestron, et.al., 2:09-cv-707 (C.D. Utah 2009)	Lutron	Vinson and Elkins
Lineage Power Corp vs SynQor Inc., 2:08-cv-00095 (E.D Tex. 2008)	SynQor	Sidley Austin
SynQor, Inc. v. Ericsson, Inc., Cisco Systems, Inc., and Vicor Corporation, 2:11-cv-54-TJW-CD	SynQor	Sidley Austin
SynQor, Inc. v. Cisco Systems, Inc., 2:13-cv-00232 (E.D. Tex. 2008)	SynQor	Sidley Austin
SynQor, Inc. v. Cisco Systems, Inc., 2:14-CV-286 (E.D. Tex. 2014)	SynQor	Sidley Austin
SynQor Inc. v. Vicor Corporation, 2:14-CV-287-MHS-CMC (E.D. Te. 2014)	SynQor	Sidley Austin
Power Integrations Inc. v. Fairchild Semiconductor Int'l, Inc., et. al., No.: 5:09-CV-05235-JW	Fairchild	McDermott, Will, and Emery
Network-1 v. Alcatel-Lucent et.al., 6:11-cv-492-LED (E.D. Tex. 2008)	Hewlett-Packard Company (Consol Defendant)	McDermott, Will, and Emery
Koninklijke Philips N.V. et al v. Amerlux, LLC et al., 1:15-cv-13086(D. Mass. 2015) USPTO proceedings	Amerlux	Day Pitney LLP
N/A – German Patent Application	Lutron, in-house	N/A
Volterra v. Infineon, et. al., USPTO Re-exam declaration	Infineon	Baker Botts
USPTO Re-examination of US 8,111,008, US 7,619,539, etc. Declarations	Lutron	Woodcock Washburn
USPTO Re-examination of US 5,905,442	Lutron	Duane Morris
Certain Integrated Circuits with Voltage Regulators and Products Containing Same, Investigation No. 337-TA-1024 (U.S.I.T.C. 2016) USPTO Petitions for *inter partes* review of US 8,233,250 declarations in IPR2017-00705, IPR2017-00706, IPR2017-00707, IPR2017-00708, IPR2017-01123, IPR2017-01124.	Intel	WilmerHale
Certain Electronic Devices, Including Mobile Phones, Table Computers, and Components Thereof, Inv. No. 337-TA-1038 (U.S.I.T.C. 2017)	Apple	WilmerHale
Fundamental Innovation Systems International LLC v. Samsung et.al.	Samsung	Kirkland & Ellis, LLP

(Case No. 2:17-cv-00145, Eastern District of Texas)		
Avaya Inc., et. al. (Case No. 17-10089, Southern District of New York)	Avaya, Inc.	Kirkland & Ellis, LLP
IPR's for Samsung (vs. NuCurrent) US 8,680,960, US 8,698,591, US 8,710,948, US 9,300,046	Samsung	Paul Hastings
Asetek Danmark A/S v. CoolIT, Case No. 3:19-cv-00410-EMC	Asetek	Finnegan, Henderson, Farabow, Garrett, & Dunner, LLP
VLSI Technology, LLC v. Intel	Intel	WilmerHale
RAI Strategic Holdings, Inc. et al. v. Altria Client Services LLC et al., Civil Action No. 1:20-cv-393 (E.D. Va.) And U.S. International Trade Commission, likely to be captioned *In the Matter of Certain Tobacco Heating Articles and Components Thereof.* INV.NO. 337-TA-1199	Philip Morris Products S.A. (PMI)	Latham & Watkins
Magnacharge, LLC v. AT&T Inc. Case No. 4:20-cv-234 (E.D. Texas)	AT&T	Carter Arnett, PLLC
Nidec Motor Corporation v. Broad Ocean Motor Co. Ltd et.al. . 4:16-cv-0399-JAR and 4:13-cv-01895-SEP (ED Missouri)	Broad Ocean Motor Co. Ltd.	Brian Cave Leighton Paisner LLP
Chamberlain v. OHD, 2:21-cv-00084 ED Texas	Overhead Door (OHD)	Latham & Watkins
Certain Barcode Scanners, Mobile Computers with Barcode Scanning Capabilities, Scan Engines, and Components Thereof (Inv. No. 337-TA-1285); *Honeywell Int'l Inc., Hand Held Products, Inc., and Metrologic Instruments, Inc. v. Zebra Techs. Corp.,* Civil Action No. 6:21-cv-01008-ADA;*Honeywell Int'l Inc., Hand Held Products, Inc., and Metrologic Instruments, Inc. v. Zebra Techs. Corp.,* Civil Action No. 6:21-cv-01010-ADA; and related matters	Zebra Technologies Corporation	Quinn Emanuel
ePropelled Inc. v. Exro Technologies Inc. IPR US 7,382,103; 1:22-cv-10090-MPK	Exro Technologies	Cozen O'Connor
U.S. International Trade Commission, Overhead Door	Overhead Door (OHD)	Latham & Watkins

ATTACHMENT C

EXHIBIT 1

CARLA S. MULHERN
Managing Principal

Phone: 202 530 3988   800 17th Street, NW
Fax: 202 530 0436   Suite 400
carla.mulhern@analysisgroup.com   Washington, DC 20006

Ms. Mulhern specializes in the application of microeconomic principles to issues arising in complex business litigation. She has served as an expert witness on damages issues in commercial litigation matters, including intellectual property and breach of contract cases. Her intellectual property damages experience spans cases involving allegations of patent, copyright, and trademark infringement, as well as misappropriation of trade secrets. Ms. Mulhern has testified before the International Trade Commission on economic issues such as commercial success, domestic industry, remedy, bond, and public interest. In addition, she has worked with leading academic experts on commercial litigation matters including intellectual property, antitrust, and breach of contract cases.

Ms. Mulhern's project experience spans a variety of industries, including automotive, computer hardware and software, consumer products, entertainment, medical devices, pharmaceuticals, semiconductors, and telecommunications. She has assisted clients in all aspects of litigation projects, including development and review of pretrial discovery, development of economic and financial models to analyze damages, critique of analyses propounded by opposing experts, and preparation of testimony.

In non-litigation matters, Ms. Mulhern has assisted clients in valuing intellectual property and other business assets in the context of strategic alliances involving licensing and joint ventures. In addition, she has consulted on matters involving the application of economic principles to issues arising in the pharmaceutical and health care fields. Ms. Mulhern has been recognized as among the top economic experts for IP matters by Intellectual Asset Management (IAM) in the IAM Patent 1000, which identifies leading patent professionals around the globe.

EDUCATION

1988	M.Sc. in Economics, London School of Economics and Political Science, London, England
1987	Diploma with Merit in Economics, London School of Economics and Political Science, London, England
1986	B.S. in Mathematics, Bucknell University, Lewisburg, PA

PROFESSIONAL EXPERIENCE

1997–Present	Analysis Group, Inc., Washington, DC
1994–1997	Putnam, Hayes & Bartlett, Inc., Washington, DC
1989–1994	National Economic Research Associates, Inc., Washington, DC

EXPERT REPORTS/TESTIMONY

▪ **In the Matter of Certain Cellular Base Station Communication Equipment, Components Thereof, and Products Containing Same, Investigation No. 337-TA-1302**
US International Trade Commission, Washington, DC
Patent infringement: expert reports (2022) and deposition testimony (2022) on behalf of respondents, Ericsson AB, Telefonaktiebolaget LM Ericsson, and Ericsson Inc., regarding economic issues related to public interest in case involving 5G mmWave cellular communications equipment.

▪ **Janssen Pharmaceuticals, Inc., Janssen Pharmaceutica NV, Janssen Research & Development, LLC v. Mylan Laboratories Limited**
US District Court, District of New Jersey
Hatch-Waxman: expert report (2022) and deposition testimony (2022) on behalf of plaintiffs regarding analysis of commercial success of patented dosing regimen of Invega Trinza (paliperidone palmitate), used to treat patients with schizophrenia.

▪ **Merck Sharp & Dohme B.V. and Merck Sharp & Dohme Corp. v. Aurobindo Pharma Ltd., Aurobindo Pharma USA, Inc., Cadila Healthcare Limited, Dr. Reddy's Laboratories, Inc., Dr. Reddy's Laboratories Ltd., Gland Pharma Ltd, Lek Pharmaceuticals d.d., LifeStar Pharma LLC, Mankind Pharma Limited, Mylan API US LLC, Mylan, Inc., Mylan Pharmaceuticals, Inc., Sandoz, Inc., Sun Pharmaceutical Industries, Inc., Sun Pharmaceutical Industries Ltd., Teva Pharmaceuticals USA, Inc., USV Private Limited, and Zydus Pharmaceuticals USA, Inc.**
US District Court, District of New Jersey
Hatch-Waxman: expert report (2022) and deposition testimony (2022) on behalf of plaintiffs regarding analysis of commercial success of patented pharmaceutical product Bridion, an injectable solution of sugammadex sodium used to reverse neuromuscular block in patients undergoing surgery.

▪ **In the Matter of Certain Smart Thermostat, Load Control Switches, and Components Thereof, Investigation No. 337-TA-1277**
US International Trade Commission, Washington, DC
Patent infringement: expert report (2022), deposition testimony (2022), and trial testimony (2022) on behalf of respondents Alarm.com Holdings, Inc.; Alarm.com, Incorporated; EnergyHub, Inc.; ecobee, Inc.; Itron, Inc.; Resideo Smart Homes Technology (Tiajun); and Ademco, Inc. regarding economic issues related to domestic industry and the appropriate amount of bond during the Presidential Review Period in case involving load control switches, smart thermostats, and AMI meters.

▪ **Vifor Fresenius Medical Care Renal Pharma Ltd. and Vifor Fresenius Medical Care Renal Pharma France S.A.S. v. Teva Pharmaceuticals USA, Inc.**
US District Court, District of Delaware
Hatch-Waxman: expert report (2022) and deposition testimony (2022) on behalf of plaintiffs regarding analysis of commercial success of patented pharmaceutical product Velphoro, a phosphate binder used for patients with chronic kidney disease on dialysis.

- **In the Matter of Certain Fitness Devices, Streaming Components Thereof, and Systems Containing Same, Investigation No. 337-TA-1265**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021), deposition testimony (2022), and trial testimony (2022) on behalf of respondents iFIT, Inc., FreeMotion Fitness, Inc., NordicTrack, Inc., lululemon athletica inc., Curiouser Products, Inc., and Peloton Interactive, Inc. regarding economic issues related to domestic industry and the appropriate amount of bond during the Presidential Review Period in case involving adaptive bit rate (ABR) technology used in video streaming components and systems including fitness devices.

- **In the Matter of Certain LTE-Compliant Cellular Communication Devices, Investigation No. 337-TA-1253**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021) and deposition testimony (2021) on behalf of respondents Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Motorola Mobility LLC regarding economic issues related to domestic industry, intervening rights, FRAND, and the appropriate amount of bond during the Presidential Review Period in case involving LTE-compliant cellular communication devices.

- **In the Matter of Certain High-Potency Sweeteners, Processes for Making Same, and Products Containing Same, Investigation No. 337-TA-1264**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021) and deposition testimony (2021) on behalf of complainants Celanese International Corporation, Celanese (Malta) Company 2 Limited, and Celanese Sales U.S., Ltd., regarding economic issues related to domestic industry and the amount and economic significance of inventory of the accused products in case involving Ace-K, a high-potency sweetener.

- **Rasmussen Instruments, LLC v. DePuy Synthes Products, Inc., DePuy Synthes Sales, Inc., and Medical Device Business Services, Inc.**
  US District Court, District of Massachusetts
  Patent infringement: expert report (2021), deposition testimony (2021), and trial testimony (2022) on behalf of defendants regarding reasonable royalty damages for patents related to instruments used in total knee arthroplasty (TKA).

- **In the Matter of Certain Smart Thermostat Systems, Smart HVAC Systems, Smart HVAC Control Systems, and Components Thereof, Investigation No. 337-TA-1258**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021), deposition testimony (2021), and trial testimony (2021) on behalf of respondents ecobee Ltd., ecobee, Inc., and Google LLC regarding economic issues related to domestic industry, remedy, and the appropriate amount of bond during the Presidential Review Period in case involving smart thermostats and smart HVAC systems.

CX-0128.3

- **In the Matter of Certain Vehicle Control Systems, Vehicles Containing the Same, and Components Thereof, Investigation No. 337-TA-1235**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021) and deposition testimony (2021) on behalf of respondents Audi AG, Audi of America, LLC, Automobili Lamborghini S.p.A., Automobili Lamborghini America, LLC, Porsche AG, Porsche Cars North America, Inc., Volkswagen AG, and Volkswagen Group of America, Inc., regarding economic issues related to domestic industry, remedy, public interest, bond, and commercial success, in case involving vehicle control systems and vehicles that incorporate them.

- **In the Matter of Certain Automated Storage and Retrieval Systems, Robots, and Components Thereof, Investigation No. 337-TA-1228**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021), deposition testimony (2021), and trial testimony (2021) on behalf of complainants AutoStore Technology AS, AutoStore AS, and AutoStore System Inc. regarding economic issues related to domestic industry, amount of inventory of accused products, and the appropriate amount of bond during the Presidential Review Period in case involving automated storage and retrieval systems and robots.

- **In the Matter of Certain Shingled Solar Modules, Components Thereof, and Methods for Manufacturing the Same, Investigation No. 337-TA-1223**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021), deposition testimony (2021), and trial testimony (2021) on behalf of complainant The Solaria Corporation regarding economic issues related to domestic industry, amount of inventory of accused products, and the appropriate amount of bond during the Presidential Review Period in case involving solar panels.

- **In the Matter of Certain Video Processing Devices, Components Thereof, and Digital Smart Televisions Containing the Same, Investigation No. 337-TA-1222**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021), deposition testimony (2021), and trial testimony (2021) on behalf of respondents Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Electronics HCMC CE Complex, Co., Ltd., LG Electronics Inc., LG Electronics U.S.A., Inc., TCL Technology Group Corporation, TCL Electronics Holdings Limited, TTE Technology, Inc., Shenzhen TCL New Technologies Co. Ltd., TCL King Electrical Appliances (Huizhou) Co. Ltd., TCL MOKA International Limited, TCL Smart Device (Vietnam) Co., Ltd, and Realtek Semiconductor Corp. regarding economic issues related to domestic industry and the appropriate amount of bond during the Presidential Review Period in case involving video processing devices in digital smart televisions.

- **Zimmer, Inc. d/b/a Zimmer Biomet and Zimmer US, Inc. v. Heraeus Medical LLC, Devin Childers, Robert Kolbe, James "Worth" Burns, Paul Cruz, and Kyle Kolbe**
  Superior Court of the State of Indiana, Kosciusko County
  Misappropriation of trade secrets, tortious interference, civil conspiracy, unfair competition, and breach of contract/breach of duty of loyalty: expert reports (2020, 2021) and deposition testimony (2021) on behalf of plaintiffs regarding damages resulting from alleged unfair acts in case involving bone cements.

- **In the Matter of Certain Mobile Electronic Devices and Laptop Computers, Investigation No. 337-TA-1215**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021) and deposition testimony (2021) on behalf of complainant Maxell, Ltd. regarding economic issues related to economic prong of domestic industry and remedy in case involving mobile devices.

- **In the Matter of Certain Movable Barrier Operator Systems and Components Thereof, Investigation No. 337-TA-1209**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2021), deposition testimony (2021), and trial testimony (2021) on behalf of complainants Overhead Door Corporation and GMI Holdings, Inc. regarding economic issues related to domestic industry, remedy, bond, and commercial success in case involving garage door operators and accessories.

- **ParkerVision, Inc. v. Qualcomm, Inc. and Qualcomm Atheros, Inc.**
  US District Court, Middle District of Florida, Orlando Division
  Patent infringement: expert report (2020) and deposition testimony (2020) on behalf of defendants regarding reasonable royalty damages for patents associated with RF receiver and transmitter technology used in semiconductor chips.

- **In the Matter of Certain Audio Players and Controllers, Components Thereof, and Products Containing Same, Investigation No. 337-TA-1191**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2020) and deposition testimony (2020) on behalf of respondent Google LLC regarding economic issues related to the appropriate amount of bond during the Presidential Review Period in case involving audio players and controllers.

- **In the Matter of Certain Bone Cements and Bone Cement Accessories, Investigation No. 337-TA-1175**
  US International Trade Commission, Washington, DC
  Misappropriation of trade secrets: expert report (2020), deposition testimony (2020), and trial testimony (2020) on behalf of complainants Zimmer, Inc. and Zimmer US, Inc. regarding economic issues related to domestic industry, injury, and the appropriate amount of bond during the Presidential Review Period in case involving bone cements.

- **In the Matter of Certain High-Density Fiber Optic Equipment and Components Thereof, Investigation No. 337-TA-1194**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2020), deposition testimony (2020), and trial testimony (2020) on behalf of respondents AFL Telecommunications LLC, FS.com Inc., Leviton Manufacturing Co., Inc., Panduit Corporation, and The Siemon Company regarding economic issues related to domestic industry, remedy, and bond in case involving high-density fiber optic equipment.

- **In the Matter of Certain Smart Thermostats, Smart HVAC Systems, and Components Thereof, Investigation No. 337-TA-1185**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2020), deposition testimony (2020), and trial testimony (2020) on behalf of respondents Alarm.com Incorporated, Alarm.com Holdings, Inc., ecobee Ltd., ecobee, Inc., Google LLC, and Vivint, Inc. regarding economic issues related to domestic industry, remedy, and bond in case involving smart thermostats and smart HVAC systems.

- **Maxell, Ltd. v. Apple, Inc.**
  US District Court, Eastern District of Texas, Texarkana Division
  Patent infringement: expert report (2020) and deposition testimony (2020) on behalf of plaintiff regarding reasonable royalty damages for patents associated with a variety of technologies related to features of mobile device products.

- **Sprint Communications Company, L.P. v. Charter Communications, Inc., Charter Communications Holdings, LLC, Spectrum Management Holding Company, LLC, Charter Communications Operation, LLC, Bright House Networks, LLC**
  US District Court, District of Delaware
  Patent infringement: expert reports (2020) and deposition testimony (2020) on behalf of defendants regarding analysis of damages in the form of lost profits and reasonable royalty in case involving VoIP (Voice over Internet Protocol) technology.

- **Hytera Communications Corp. Ltd. v. Motorola Solutions, Inc.**
  US District Court, Northern District of Ohio, Eastern Division
  Patent infringement: expert report (2020) and deposition testimony (2020) on behalf of defendants regarding analysis of economic issues related to secondary considerations of non-obviousness, i.e., commercial success and reasonable royalty damages, in case involving technology related to digital mobile radios.

- **In the Matter of Certain Mobile Devices with Multifunction Emulators, Investigation No. 337-TA-1170**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2020), deposition testimony (2020), and trial testimony (2020) on behalf of respondents Samsung Electronics Co., Ltd and Samsung Electronics America, Inc., regarding economic issues related to domestic industry, remedy and bond in case involving magnetic emulators used in secure payment cards and certain mobile devices.

- **Vifor Fresenius Medical Care Renal Pharma Ltd. and Vifor Fresenius Medical Care Renal Pharma France S.A.S. v. Lupin Atlantis Holdings SA, Lupin Pharmaceuticals, Inc., and Teva Pharmaceuticals USA, Inc.**
  US District Court, District of Delaware
  Hatch-Waxman: expert report (2019), deposition testimony (2020), and trial testimony (2021) on behalf of plaintiffs regarding analysis of commercial success of patented pharmaceutical product Velphoro, a phosphate binder used for patients with chronic kidney disease on dialysis.

- **Janssen Pharmaceuticals, Inc. and Janssen Pharmaceutica NV v. Teva Pharmaceuticals USA, Inc. and Teva Pharmaceuticals Industries Ltd.**
  US District Court, District of New Jersey
  Hatch-Waxman: expert report (2019), deposition testimony (2019), and trial testimony (2020) on behalf of plaintiffs regarding analysis of commercial success of patented pharmaceutical product Invega Sustenna, an antipsychotic drug for the treatment of schizophrenia and schizoaffective disorder.

- **In the Matter of Certain Bone Cements, Components Thereof and Products Containing the Same, Investigation No. 337-TA-1153**
  US International Trade Commission, Washington, DC
  Misappropriation of trade secrets: expert report (2019), deposition testimony (2019), and trial testimony (2020) on behalf of respondents Zimmer Biomet Holdings, Inc.; Biomet, Inc.; Zimmer Surgical, Inc.; Biomet France S.A.R.L.; Biomet Deutschland GmbH; Zimmer Biomet Deutschland GmbH; Biomet Global Supply Chain Center B.V.; Zimmer Biomet Nederland B.V.; Biomet Orthopedics, LLC; Biomet Orthopaedics Switzerland GmbH; Zimmer US, Inc.; Zimmer, GmbH; and Biomet Manufacturing, LLC, regarding economic issues related to domestic industry, injury, and the appropriate amount of bond during the Presidential Review Period in case involving bone cements.

- **In the Matter of Certain Botulinum Toxin Products, Processes for Manufacturing or Relating to Same, and Certain Products Containing Same, Investigation No. 337-TA-1145**
  US International Trade Commission, Washington, DC
  Misappropriation of trade secrets: expert report (2019), deposition testimony (2019), and trial testimony (2020) on behalf of respondents Daewoong Pharmaceuticals Co., Ltd., Daewoong Co., Ltd., and Evolus, Inc., regarding economic issues related to domestic industry, injury, and the appropriate amount of bond during the Presidential Review Period in case involving botulinum toxin products.

- **Adapt Pharma Operations Limited, Adapt Pharma, Inc., Adapt Pharma Limited, and Opiant Pharmaceuticals, Inc. v. Teva Pharmaceuticals USA, Inc. and Teva Pharmaceuticals Industries Ltd.**
  US District Court, District of New Jersey
  Hatch-Waxman: expert report (2019) and deposition testimony (2019) on behalf of plaintiffs regarding analysis of commercial success of patented pharmaceutical product Narcan Nasal Spray (naloxone hydrochloride), used in the treatment of opioid overdose.

- **In the Matter of Certain Electronic Nicotine Delivery Systems and Components Thereof, Investigation No. 337-TA-1139**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2019), deposition testimony (2019), and trial testimony (2019) on behalf of complainant Juul Labs, Inc., regarding economic issues related to domestic industry, amount of inventory of accused products, bond, and certain considerations of non-obviousness in case involving e-cigarettes.

- **AgroFresh, Inc. v. Essentiv LLC, Decco U.S. PostHarvest, Inc., and Cerexagri, Inc. d/b/a Deco Post-Harvest**
  US District Court, District of Delaware
  Patent infringement, unfair competition, and misappropriation of trade secrets: expert report (2018), deposition testimony (2019), and trial testimony (2019) on behalf of defendants, responding to plaintiff's claims of damages in case involving agricultural chemicals.

- **In the Matter of Certain Beverage Dispensing Systems and Components Thereof, Investigation No. 337-TA-1130**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2018), deposition testimony (2019), and trial testimony (2019) on behalf of complainants Heineken International B.V., Heineken Supply Chain B.V., and Heineken USA Inc. regarding economic issues related to domestic industry, amount of inventory of accused products, and bond in case involving draft beer dispensing systems.

- **Amgen, Inc., Amgen Manufacturing, Ltd., and Amgen USA, Inc. v. Sanofi, Sanofi-Aventis U.S., LLC, Aventisub, LLC, f/d/b/a/ Aventis Pharmaceuticals, Inc., and Regeneron Pharmaceuticals, Inc. ("Remand Proceeding")**
  US District Court, District of Delaware
  Patent infringement: expert report (2018) and deposition testimony (2018) on behalf of defendants regarding lost profits, price erosion, and reasonable royalty damages in case involving biologic product, PCSK9 inhibitor.

- **In the Matter of Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof, Investigation No. 337-TA-1093**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2018), deposition testimony (2018), and trial testimony (2018) on behalf of complainant Qualcomm Incorporated regarding economic issues related to public interest in case involving smartphones and tablets that incorporate baseband processor modems.

- **In the Matter of Certain Road Construction Machines and Components Thereof, Investigation No. 337-TA-1088**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2018), deposition testimony (2018), and trial testimony (2018) on behalf of respondents Wirtgen GmbH, Joseph Vögele AG, Wirtgen Group Holding GmbH, and Wirtgen America, Inc., regarding economic issues related to domestic industry, commercial success, and bond in case involving road construction equipment.

- **In the Matter of Certain Thermoplastic-Encapsulated Electric Motors, Components Thereof, and Products and Vehicles Containing Same II, Investigation No. 337-TA-1073**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2018), deposition testimony (2018), and trial testimony (2018) on behalf of respondents Aisin Seiki Co., Ltd.; Aisin Holdings of America, Inc.; Aisin Technical Center of America, Inc.; Aisin World Corp. of America; Bayerische Motoren Werke AG; BMW of North America, LLC; BMW Manufacturing Co., LLC; Honda Motor Co., Ltd.; Honda North America, Inc.; American Honda Motor Co., Inc.; Honda of America Mfg., Inc.; Honda Manufacturing of Alabama, LLC; Honda R&D Americas, Inc.; Nidec Corporation; Nidec Automotive Motor Americas, LLC; Toyota Motor Corporation; Toyota Motor North America, Inc.; Toyota Motor Sales, U.S.A., Inc.; Toyota Motor Engineering and Manufacturing North America, Inc.; Toyota Motor Manufacturing, Indiana, Inc.; and Toyota Motor Manufacturing, Kentucky, Inc. regarding economic issues related to domestic industry in case involving fuel pumps, electric water pumps, power steering motors, and actuators.

- **In the Matter of Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof, Investigation No. 337-TA-1065**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2018), deposition testimony (2018), and trial testimony (2018) on behalf of complainant Qualcomm Incorporated regarding economic issues related to public interest in case involving smartphones and tablet computers which incorporate baseband processor modems.

- **Takeda Pharmaceuticals USA, Inc. v. West-Ward Pharmaceutical Corporation, Hikma Americas, Inc., and Hikma Pharmaceuticals, PLC**
  US District Court, District of Delaware
  Patent infringement: expert report (2018) and deposition testimony (2018) on behalf of plaintiffs regarding lost profits related to temporary restraining order in case involving oral colchicine tablets.

- **In the Matter of Certain Microfluidic Devices, Investigation No. 337-TA-1068**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2018), deposition testimony (2018), and trial testimony (2018) on behalf of complainants Bio-Rad Laboratories, Inc. and Lawrence Livermore National Security, LLC, regarding economic issues related to domestic industry, bond, and amount and value of inventory of accused products, and public interest in case involving microfluidic devices used in analyzing biological samples for health care research.

- **In the Matter of Certain Road Milling Machines and Components Thereof, Investigation No. 337-TA-1067**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2018), deposition testimony (2018), and trial testimony (2018) on behalf of complainant Wirtgen America, Inc., regarding economic issues related to domestic industry, bond, amount and value of inventory of accused products, and commercial success in case involving road milling machines.

- **Maxell, Ltd. v. ZTE Corporation and ZTE USA, Inc.**
  US District Court, Eastern District of Texas, Texarkana Division
  Patent infringement: expert report (2018), deposition testimony (2018), and trial testimony (2018) on behalf of plaintiff Maxell, Ltd., regarding reasonable royalty damages for patents associated with a variety of technologies related to features of mobile device products.

- **Maxell, Ltd. v. Huawei Device USA, Inc. and Huawei Device Co., Ltd.**
  US District Court, Eastern District of Texas, Texarkana Division
  Patent infringement: expert report (2018) and deposition testimony (2018) on behalf of plaintiff
  Maxell, Ltd., regarding reasonable royalty damages for patents associated with a variety of
  technologies related to features of mobile device products.

- **AMAG Pharmaceuticals, Inc. v. Sandoz, Inc.**
  US District Court, District of New Jersey
  Hatch-Waxman: expert reports (2017) and deposition testimony (2017) on behalf of plaintiff
  regarding analysis of commercial success of patented pharmaceutical product Feraheme
  (ferumoxytol), which is used to treat iron deficiency anemia, and economic analysis regarding
  statutory permanent injunction factors.

- **In the Matter of Certain Digital Cable and Satellite Products, Set-Top Boxes, Gateways, and
  Components Thereof, Investigation No. 337-TA-1049**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2017) and deposition testimony (2017) on behalf of complainants
  Sony Corporation and Sony Electronics, Inc., regarding economic issues related to domestic industry
  in case involving digital televisions, set-top boxes, and media gateways.

- **In the Matter of Certain Semiconductor Devices and Consumer Audiovisual Products
  Containing the Same, Investigation No. 337-TA-1047**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2017), deposition testimony (2017), and trial testimony (2017) on
  behalf of complainant Broadcom Corporation regarding economic issues related to domestic industry,
  bond, and amount and value of inventory of accused products, in case involving SOC semiconductor
  devices and products that incorporate them including Blu-Ray players, DVD players, and digital
  televisions.

- **In the Matter of Certain Graphics Systems, Components Thereof, and Consumer Products
  Containing the Same, Investigation No. 337-TA-1044**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2017) and deposition testimony (2017) on behalf of complainants
  Advanced Micro Devices, Inc. and ATI Technologies ULC regarding economic issues related to
  domestic industry in case involving semiconductor components such as APUs and GPUs.

- **In the Matter of Certain Carbon and Alloy Steel Products, Investigation No. 337-TA-1002**
  US International Trade Commission, Washington, DC
  Unfair competition: expert report (2017) and deposition testimony (2017) on behalf of respondents
  Shanghai Baosteel Group Corporation; Baoshan Iron & Steel Co., Ltd.; Baosteel America, Inc.; Hebei
  Iron and Steel Group Co., Ltd.; Hebei Iron & Steel Group Hengshui Strip Rolling Co., Ltd.; Hebei
  Iron & Steel (Hong Kong) International Trade Co., Ltd.; Jiangsu Shagang Group; Jiangsu Shagang
  International Trade Co., Ltd.; Anshan Iron and Steel Group; Angang Group International Trade
  Corporation; Angang Group Hong Kong Co. Ltd.; Wuhan Iron and Steel Group Corp.; Wuhan Iron
  and Steel Co., Ltd.; WISCO America Co., Ltd.; Shougang Corporation; China Shougang International
  Trade & Engineering Corporation; Magang Group Holding Co. Ltd.; and Maanshan Iron and Steel
  Co. Ltd. regarding economic issues related to domestic industry and injury in case involving the
  importation of steel by respondents with a false designation of origin and misappropriation of trade
  secrets.

- **EndoEvolution, LLC v. Ethicon Endo-Surgery, Inc.**
  American Arbitration Association, International Center for Dispute Resolution
  Breach of contract, fraud, and misappropriation of trade secrets: expert report (2017) and hearing testimony (2017) on behalf of defendant, Ethicon, regarding monetary compensation resulting from alleged misappropriation of trade secrets relating to medical device used for minimally invasive surgery.

- **In the Matter of Certain Passenger Vehicle Automotive Wheels, Investigation No. 337-TA-1006**
  US International Trade Commission, Washington, DC
  Design patent and trademark infringement: expert report (2016) on behalf of complainant Daimler AG regarding economic issues related to domestic industry in case involving passenger vehicle automotive wheels.

- **Odyssey Wireless, Inc. v. Motorola Mobility LLC**
  US District Court, Southern District of California, San Diego Division
  Patent infringement: expert report (2016) and deposition testimony (2016) on behalf of defendants regarding reasonable royalty damages for patents associated with technology related to the LTE telecommunications standard.

- **In the Matter of Certain Radio Frequency Identification ("RFID") Products and Components Thereof, Investigation No. 337-TA-979**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2016), deposition testimony (2016), and trial testimony (2016) on behalf of respondents Kapsch and Star regarding economic issues related to public interest, bond, and commercial success in case involving RFID technology used in electronic toll collection systems.

- **VideoShare, LLC v. Google, Inc. and YouTube, LLC**
  US District Court, District of Delaware
  Patent infringement: expert report (2016) and deposition testimony (2016) on behalf of defendants regarding reasonable royalty damages in case involving technology related to video sharing, uploading, and conversion.

- **Amgen, Inc. v. Sanofi, Sanofi-Aventis U.S., LLC, Aventisub, LLC, f/d/b/a/ Aventis Pharmaceuticals, Inc., and Regeneron Pharmaceuticals, Inc.**
  US District Court, District of Delaware
  Patent infringement: expert report (2015) and deposition testimony (2016) on behalf of defendants regarding lost profits, price erosion, and reasonable royalty damages in case involving biologic product, PCSK9 inhibitor.

- **CardiAQ Valve Technologies, Inc. v. Neovasc, Inc. and Neovasc Tiara, Inc.**
  US District Court, District of Massachusetts
  Breach of contract, fraud, and misappropriation of trade secrets: expert report (2015), deposition testimony (2016), and trial testimony (2016) on behalf of defendants in case involving mitral valve implants for the heart.

- **In the Matter of Certain Lithium Metal Oxide Cathode Materials, Lithium-Ion Batteries Containing Same, and Products with Lithium-Ion Batteries Containing Same, Investigation No. 337-TA-951**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2015) and deposition testimony (2015) on behalf of complainants BASF Corporation and UChicago Argonne LLC regarding economic issues related to domestic industry, remedy, bond, and public interest in case involving cathode materials used in lithium-ion batteries.

- **In the Matter of Certain Graphics Processing Chips, Systems on a Chip, and Products Containing the Same, Investigation No. 337-TA-941**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2015), deposition testimony (2015), and trial testimony (2015) on behalf of complainant Samsung regarding domestic industry, remedy, bond, and public interest in case involving GPU and SOC semiconductor devices.

- **The Washington University v. Wisconsin Alumni Research Foundation**
  US District Court, District of Delaware
  Breach of contract: expert report (2015), deposition testimony (2015), and trial testimony (2018) on behalf of defendant regarding damages arising from alleged breach of contract involving pharmaceutical product Zemplar.

- **In the Matter of Certain Windshield Wipers and Components Thereof, Investigation No. 337-TA-937**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2015), deposition testimony (2015), and trial testimony (2015) on behalf of complainants Valeo North America, Inc. and Delmex de Juarez S. de R.L. de C.V. regarding domestic industry in case involving windshield wipers.

- **In the Matter of Certain Dental Implants, Investigation No. 337-TA-934**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2015), deposition testimony (2015), and trial testimony (2015) on behalf of respondent Neodent regarding domestic industry in case involving dental implants.

- **In the Matter of Certain Formatted Magnetic Data Storage Tapes and Cartridges Containing the Same, Investigation No. 337-TA-931**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2015) and deposition testimony (2015) on behalf of respondents IBM and Oracle regarding public interest in case involving magnetic tape data storage systems.

- **In the Matter of Certain Sulfentrazone, Sulfentrazone Compositions, and Processes for Making Sulfentrazone, Investigation No. 337-TA-914**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports and trial testimony (2014 and 2015) on behalf of complainant FMC Corporation regarding domestic industry in case involving agricultural herbicide products.

- **In the Matter of Certain Devices Containing Non-volatile Memory and Products Containing the Same, Investigation No. 337-TA-922**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2015) on behalf of respondent Spansion Inc. regarding remedy, bond, and public interest in case involving non-volatile memory including NAND flash memory.

- **Comcast v. Sprint**
  US District Court, District of Delaware
  Patent infringement: expert reports (2014), deposition testimony (2014), and trial testimony (2014) on behalf of plaintiff Comcast regarding reasonable royalty damages in case involving telecommunications network technology.

- **In the Matter of Certain Antivenom Compositions and Products Containing the Same, Investigation No. 337-TA-903**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2014) and deposition testimony (2014) on behalf of complainant BTG regarding domestic industry, remedy, bond, and public interest in case involving antivenoms used in treating snake bites.

- **Louis Vuitton Malletier S.A., v. Sunny Merchandise Corp., et.al.**
  US District Court, Southern District of New York
  Trademark infringement: expert report (2014) and deposition testimony (2014) on behalf of plaintiff Louis Vuitton Malletier, S.A., regarding actual and unjust enrichment damages in case involving alleged use of Louis Vuitton trademarks on eyewear.

- **In the Matter of Certain Navigation Products, Including GPS Devices, Navigation and Display Systems, Radar Systems, Navigational Aids, Mapping Systems, and Related Software, Investigation No. 337-TA-900**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2014) and deposition testimony (2014) on behalf of complainant Furuno Electric Co. regarding domestic industry, remedy, bond, and public interest in case involving marine navigation devices.

- **Mylan v. GlaxoSmithKline**
  US District Court, District of New Jersey
  Breach of contract: expert reports (2011 and 2013), deposition testimony (2011 and 2014), and trial testimony (2014) responding to plaintiff's claims of damages resulting from breach of contract involving generic pharmaceutical product.

- **In the Matter of Certain Integrated Circuit Chips and Products Containing Same, Investigation No. 337-TA-859**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2013), deposition testimony (2013), and trial testimony (2014) on behalf of respondents LSI Corporation and Seagate Technology regarding domestic industry and bond in Section 337 case involving semiconductor technology.

- **Walker Digital, LLC v. Google, Inc.**
  US District Court, District of Delaware
  Patent infringement: expert report (2013) and deposition testimony (2014) regarding reasonable royalty damages for patent infringement case involving patents related to anonymous communication technology used in social networks.

- **In the Matter of Certain TV Programs, Literary Works for TV Production and Episode Guides Pertaining to Same, Investigation No. 337-TA-886**
  US International Trade Commission, Washington, DC
  Copyright infringement and unfair competition: expert report (2013) and deposition testimony (2014) on behalf of respondents The Walt Disney Company and Thunderbird Films, Inc., regarding the existence of a domestic industry and injury to a domestic industry in Section 337 case involving literary works related to a pilot television series.

- **In the Matter of Certain Microelectromechanical Systems ("MEMS Devices") and Products Containing Same, Investigation No. 337-TA-876**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2013) and deposition testimony (2013) on behalf of complainant ST Microelectronics, Inc., regarding domestic industry, remedy, cease and desist order, and bond in Section 337 case involving microelectromechanical (MEMS) devices.

- **In the Matter of Certain Wireless Communications Equipment and Articles Therein, Investigation No. 337-TA-866**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2013), deposition testimony (2013), and trial testimony (2013) on behalf of complainants Samsung Electronics Co., Ltd. and Samsung Telecommunications America, LLC, regarding domestic industry, remedy, cease and desist order, and bond in Section 337 case involving wireless communications equipment.

- **Organogenesis, Inc. v. Vincent Ronfard and Healthpoint, Ltd.**
  Commonwealth of Massachusetts Superior Court, Suffolk County
  Breach of contract, unfair competition, and misappropriation of trade secrets: expert report (2013) and deposition testimony (2013) on behalf of plaintiff regarding damages arising from alleged violations relating to employment contract for companies in biopharmaceutical industry.

- **In the Matter of Certain Products Having Laminated Packaging, and Components Thereof, Investigation No. 337-TA-874**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2013), deposition testimony (2013), and trial testimony (2013) on behalf of respondents Remy Cointreau USA, Inc.; Pernod Ricard USA LLC; John Jameson Import Company; Moët Hennessy USA, Inc.; Champagne Louis Roederer; Maisons Marques & Domaines USA Inc.; Freixenet USA, Inc.; L'Oreal USA, Inc.; Hasbro, Inc.; Cognac Ferrand USA Inc.; Diageo North America, Inc.; WJ Deutsch & Sons Ltd.; and Beats Electronics LLC regarding domestic industry in Section 337 case involving products having laminated packaging.

- **In the Matter of Certain Projectors with Controlled-Angle Retarders, Components Thereof, and Products Containing Same, Investigation No. 337-TA-815**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2012) and deposition testimony (2012) on behalf of respondents Sony Corporation, Sony Corporation of America, and Sony Electronics Inc. regarding domestic industry in Section 337 case involving projectors.

- **In the Matter of Certain Dynamic Random Access Memory and NAND Flash Memory Devices and Products Containing Same, Investigation No. 337-TA-803**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2012) and deposition testimony (2012) on behalf of respondents Elpida Memory, Inc.; Elpida Memory (USA) Inc.; Hynix Semiconductor Inc.; Hynix Semiconductor America, Inc.; Acer Inc.; Acer America Corp.; ADATA Technology Co., Ltd; ADATA Technology (USA) Co., Ltd.; Asustek Computer Inc.; Asus Computer International; Dell, Inc.; Hewlett-Packard Company; Kingston Technology Co., Inc.; Logitech International S.A.; Logitech, Inc.; Best Buy Co., Inc.; and Wal-Mart Stores, Inc., regarding domestic industry, remedy, bond, and public interest in Section 337 case involving DRAM and NAND flash memory devices.

- **Genentech, Inc. v. UCB Celltech**
  American Arbitration Association, International Center for Dispute Resolution
  Breach of contract: expert reports (2012) and hearing testimony (2012) on behalf of plaintiff regarding damages arising from alleged breach of contract and fraud involving pharmaceutical products.

- **Apple Inc. and Next Software, Inc. (f/k/a Next Computer, Inc.) v. Motorola, Inc., and Motorola Mobility, Inc.**
  US District Court, Northern District of Illinois
  Patent infringement: expert report (2012) and deposition testimony (2012) on behalf of Motorola, Inc., and Motorola Mobility, Inc., regarding damages due Motorola associated with alleged infringement of patents directed to wireless communications functionality.

- **In the Matter of Certain Electronic Devices, Including Wireless Communication Devices, Portable Music and Data Processing Devices, and Tablet Computers, Investigation No. 337-TA-794**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2012), deposition testimony (2012), and trial testimony (2012) on behalf of complainants Samsung Electronics Co., Ltd. and Samsung Telecommunications America, LLC, regarding domestic industry in Section 337 case involving certain electronic devices.

- **Automated Merchandising Systems, Inc. v. Crane Co., and Seaga Manufacturing, Inc.**
  US District Court, Northern District of West Virginia
  Patent infringement: expert report (2011) regarding lost profits and reasonable royalty damages for patent infringement involving vending machines.

- **In the Matter of Certain Mobile Devices and Related Software, Investigation No. 337-TA-750**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2011) and deposition testimony (2011) on behalf of respondents Motorola Mobility, Inc. and Motorola Solutions, Inc., regarding domestic industry and appropriate amount of bond in Section 337 case involving mobile devices.

- **In the Matter of Certain Liquid Crystal Display Devices, Including Monitors, Televisions, and Modules, and Components Thereof, Investigation No. 337-TA-749C**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2011), deposition testimony (2011), and trial testimony (2011) on behalf of respondents AU Optronics Corporation; BenQ Corporation; Chimei InnoLux Corporation; MStar Semiconductor, Inc.; and Qisda Corporation regarding domestic industry in Section 337 case involving LCD displays.

- **In the Matter of Certain Wireless Communication Devices, Portable Music and Data Processing Devices, Computers and Components Thereof, Investigation No. 337-TA-745**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2011) and deposition testimony (2011) on behalf of complainant Motorola Mobility Inc. regarding domestic industry and certain secondary considerations of non-obviousness in Section 337 case involving wireless communication devices.

- **Paone v. Microsoft Corp.**
  US District Court, Eastern District of New York
  Patent infringement: expert reports (2008 and 2011) and deposition testimony (2009 and 2011) regarding reasonable royalty damages for patent infringement case involving patent related to encryption technology used in computer software.

- **Intex Recreation Corp. v. Team Worldwide Corp.**
  US District Court, Washington, DC
  Patent infringement: expert reports (2006 and 2011) and deposition testimony (2006) in a patent infringement case involving inflatable air mattresses. Provided testimony on lost profits and reasonable royalty damages.

- **B. Braun Melsungen et al. v. Terumo Medical Corp. et al.**
  US District Court, District of Delaware
  Patent infringement: expert report (2010), deposition testimony (2010), and trial testimony (2010) regarding commercial success of safety IV catheter and contribution of patented technology.

- **Touchcom v. Bereskin & Parr et al.**
  US District Court, Eastern District of Virginia
  Professional negligence: expert report (2010) and deposition testimony (2010) regarding damages due to plaintiff as a result of defendant's alleged malpractice in preparing and prosecuting patent application directed to interactive fuel pump system.

- **In the Matter of Certain DC-DC Controllers and Products Containing Same, Investigation No. 337-TA-698**
  US International Trade Commission, Washington, DC
  Patent infringement and misappropriation of trade secrets: expert report (2010) and deposition testimony (2010) on behalf of respondents uPI Semiconductor Corp. and Sapphire Technology regarding injury to domestic industry and scope of exclusion order in Section 337 case involving DC-DC controllers.

- **In the Matter of Certain MLC Flash Memory Devices and Products Containing Same, Investigation No. 337-TA-683**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2010), deposition testimony (2010), and trial testimony (2010) on behalf of respondent Samsung regarding domestic industry, scope of exclusion order, and appropriate amount of bond in Section 337 case involving patents directed to multi-level cell flash memory technology.

- **In the Matter of Certain Semiconductor Integrated Circuits and Products Containing Same, Investigation No. 337-TA-665**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2009), deposition testimony (2009), and trial testimony (2009) on behalf of respondents LSI and Seagate regarding domestic industry and scope of exclusion order in Section 337 case involving patents directed to semiconductor design and manufacturing processes.

- **McKesson v. Epic**
  US District Court, Northern District of Georgia
  Patent infringement: expert report (2009) and deposition testimony (2009) regarding reasonable royalty damages for patent infringement case involving patent related to health information software.

- **Samsung Electronics v. ON Semiconductor Corp.**
  US District Court, District of Delaware
  Patent infringement: expert reports (2008) and deposition testimony (2008) regarding reasonable royalty damages for patent infringement case involving patents directed to semiconductor manufacturing processes and products.

- **In the Matter of Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same, Investigation No. 337-TA-630**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2008), deposition testimony (2008), and trial testimony (2008) on behalf of respondents Kingston, ProMOS, Elpida, and Nanya regarding scope of exclusion order and appropriate amount of bond in Section 337 case involving semiconductor packaging technology.

- **In the Matter of Certain Baseband Processor Chips and Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips and Products Containing Same, Including Cellular Telephone Handsets, Investigation No. 337-TA-543 – Enforcement Proceeding**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2008), deposition testimony (2008), and trial testimony (2008) on behalf of complainant Broadcom regarding claim that respondent violated cease and desist order. Provided testimony related to maximum value of penalty associated with alleged violations.

- **adidas America v. Wal-Mart**
  US District Court, District of Oregon
  Trademark infringement: expert report (2008) and deposition testimony (2008) regarding reasonable royalty damages for trademark infringement case involving striped footwear.

- **In the Matter of Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same, Investigation No. 337-TA-605**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2008), deposition testimony (2008), and trial testimony (2008) on behalf of respondent ST Microelectronics regarding domestic industry, scope of exclusion order, and appropriate amount of bond to be set for products covered by exclusion order during Presidential Review Period in Section 337 case involving semiconductor packaging technology.

- **JDB Medical, Inc. and James D. Beeton, Flint Medical, Inc. and Keith Flint v. The Sorin Group, S.p.A. and ELA Medical, Inc.**
  US District Court, District of Colorado
  Breach of contract damages: expert report (2007) and deposition testimony (2008) responding to plaintiff's claim of damages resulting from breach of a sales agreement involving cardiac rhythm management devices.

- **TruePosition v. Andrew Corp.**
  US District Court, District of Delaware
  Patent infringement: expert report (2006), deposition testimony (2007), and trial testimony (2007) on behalf of plaintiff TruePosition in a patent infringement case involving cellular telephone location equipment. Provided testimony on lost profits damages.

- **In the Matter of Certain NOR and NAND Flash Memory Devices and Products Containing Same, Investigation No. 337-TA-560**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2006), deposition testimony (2006), and trial testimony (2006) on behalf of respondent ST Microelectronics regarding domestic industry, scope of exclusion order, and appropriate amount of bond to be set for products covered by exclusion order during Presidential Review Period in Section 337 case involving NAND and NOR flash memory products.

- **In the Matter of Certain Flash Memory Devices and Components Thereof, and Products Containing Such Devices and Components, Investigation No. 337-TA-552**
  US International Trade Commission, Washington, DC
  Patent infringement: expert report (2006) and deposition testimony (2006) on behalf of respondent Hynix regarding certain secondary considerations, domestic industry, scope of exclusion order, and appropriate amount of bond to be set during Presidential Review Period in Section 337 case involving NAND flash memory products.

- **In the Matter of Certain Baseband Processor Chips and Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips and Products Containing Same, Including Cellular Telephone Handsets, Investigation No. 337-TA-543**
  US International Trade Commission, Washington, DC
  Patent infringement: expert reports (2005 and 2006), deposition testimony (2006), and trial testimony (2006) on behalf of complainant Broadcom regarding scope of exclusion order associated with baseband and radio chips used in cellular telephones and other handheld devices in Section 337 case.

- **In the Matter of Certain NAND Flash Memory Circuits and Products Containing the Same, Investigation No. 337-TA-526**
  US International Trade Commission, Washington, DC
  Patent infringement: rebuttal expert report and deposition testimony (2005) on behalf of respondent ST Microelectronics regarding domestic industry, scope of exclusion order, and appropriate amount of bond to be set for products covered by exclusion order during Presidential Review Period in Section 337 case involving NAND flash memory products.

- **PDI, Inc. v. Cellegy Pharmaceuticals, Inc.**
  US District Court, Northern District of California, San Francisco
  Commercial damages: expert report and deposition testimony (2005) regarding analysis of damages arising from claims of fraud and breach of contract in case involving male testosterone hormone replacement therapy.

- **Minuteman Trucks, Inc. v. HN80 Corporation and Sterling Truck Corp.**
  Superior Court of Massachusetts, Suffolk County
  Commercial damages: rebuttal expert report and trial testimony (2004) regarding issues related to calculation of damages associated with alleged violation of Massachusetts statute regarding dealer pricing in case involving heavy trucks.

- **Miltope Corporation and IV Phoenix Group Inc, v. DRS Technologies et al.**
  US District Court, Eastern District of New York
  Misappropriation of trade secrets: expert report and deposition testimony (2003) on reasonable royalty damages in case involving rugged personal computers.

- **John W. Evans, et al., v. General Motors Corp.**
  Superior Court of Connecticut, Judicial District of Waterbury at Waterbury
  Misappropriation of trade secrets: expert report and deposition testimony (2002) and trial testimony (2003) on reasonable royalty damages in case involving automotive engine technology.

- **SRAM Corporation v. AD-II Engineering, Inc.**
  US District Court, Northern District of Illinois
  Patent infringement: expert report and deposition testimony (2002) on reasonable royalty damages due patent holder and lost profits due alleged infringer arising from allegedly false accusations involving patents related to bicycle twist shifters.

- **Qwest Communications International et al. v. WorldQuest Networks, Inc.**
  US District Court, Eastern District of Virginia
  Trademark infringement and unfair competition: expert report on damages in case involving sales of prepaid calling cards.

- **The Quigley Corporation v. GumTech International, et al.**
  US District Court, Eastern District of Pennsylvania
  Patent infringement: expert report and deposition testimony (2001) on damages in case involving patent related to the use of zinc gluconate to reduce the duration of the common cold.

- **Cytyc Corporation v. Autocyte, Inc.**
  US District Court, District of Delaware
  Patent infringement: expert report and deposition testimony (2000) on damages in case involving liquid-based cervical cancer screening tests.

- **Hearthstone, Inc. v. Ronald M. Hawes, et al.**
  US District Court, Eastern District of Virginia
  Copyright and trademark infringement, breach of contract, and unfair competition: expert report on damages involving architectural plans for log homes.

SELECTED LITIGATION CONSULTING ASSIGNMENTS

Commercial Damages/Intellectual Property

- **Cubist v. Teva**
  US District Court, District of Delaware
  Hatch-Waxman: analysis of commercial success of patented pharmaceutical product Cubicin (daptomycin).

- **Cubist v. Hospira**
  US District Court, District of Delaware
  Hatch-Waxman: analysis of commercial success of pharmaceutical product Cubicin (daptomycin).

- **Nokia v. Apple**
  US District Court, District of Delaware
  Patent infringement: analysis of issues associated with determination of FRAND royalty for patents incorporated in wireless telecommunications products on behalf of Nokia.

- **Novartis v. Teva**
  US District Court, District of Delaware
  Hatch-Waxman: analysis of commercial success of patented pharmaceutical products Zometa and Reclast (zoledronic acid).

- **Nokia v. Qualcomm**
  Delaware Chancery Court
  Commercial litigation: analysis of issues associated with determination of FRAND royalty for patents incorporated in wireless communications products on behalf of Nokia.

- **O2 Micro v. Samsung Electronics**
  US District Court, Eastern District of Texas
  Patent damages: analysis of plaintiff's claims with respect to reasonable royalty damages for patents directed to technology used in LCD screens.

- **GlaxoSmithKline v. Ranbaxy**
  US District Court, District of New Jersey
  Hatch-Waxman: analysis of commercial success of patented pharmaceutical product Valtrex (valacyclovir hydrochloride).

- **Medinol Ltd. v. Boston Scientific Corp.**
  US District Court, Southern District of New York
  Breach of contract damages: analysis of damages resulting from allegations of breach of contract and misappropriation of trade secrets in case involving coronary stents.

- **Burst.Com v. Microsoft Corp.**
  US District Court, District of Maryland
  Patent and trade secrets damages: analysis of reasonable royalty damages in case involving software used for streaming media. Response to plaintiff's claim of lost profits damages and unjust enrichment arising from misappropriation of trade secrets.

- **Medtronic AVE v. Advanced Cardiovascular Systems and Guidant Corp.**
  US District Court, District of Delaware
  Patent and trade secrets damages: analysis of lost profits and reasonable royalty damages in case involving coronary stents. Response to plaintiff's claim of damages arising from misappropriation of trade secrets.

- **Titan Sports, Inc., etc. v. Turner Broadcasting Systems, Inc. et al.**
  US District Court, District of Connecticut
  Copyright and trademark damages: unjust enrichment due to misappropriation of intellectual property involving two popular wrestling characters.

- **Stairmaster Sports/Medical Products, a Limited Partnership v. Groupe Procycle, Inc. et al.**
  US District Court, District of Delaware
  Patent damages: lost profits, reasonable royalty, and prejudgment interest involving patent directed to stair-climbing fitness equipment.

- **BTG v. Magellan Corp./BTG v. Trimble Navigation**
  US District Court, Eastern District of Pennsylvania
  Patent damages/intervening rights: reasonable royalty, prejudgment interest, value of inventory on hand, preparation and investments made, and business commenced (as of patent reissue) involving a patent directed to secret or secure communications technology employed in global positioning system products.

- **Joint Medical Products Corp. v. DePuy Orthopaedics, Inc. et al.**
  US District Court, District of Connecticut
  Patent damages: lost profits and reasonable royalty for patents directed to orthopedic implants.

- **Cordis Corp. v. SciMed Life Systems, Inc.**
  US District Court, District of Minnesota
  Patent damages: lost profits, reasonable royalty, and prejudgment interest for patent directed to balloon catheters used in Percutaneous Transluminal Coronary Angioplasty (PTCA).

- **Nexstar Pharmaceuticals, Inc. v. The Liposome Company**
  US District Court, District of Delaware
  Patent damages/intervening rights: valuation of inventory on hand, preparations and investments made, and business commenced (as of patent reissuance) involving patents directed to lipid formulations of an anti-fungal pharmaceutical.

- **Autonation, Inc. v. Acme Commercial Corp., at al. (CarMax)**
  US District Court, Southern District of Florida
  Trademark infringement/unfair competition: reasonable royalty associated with trademark infringement and unfair competition in the auto superstore business.

- **General Motors (GM) v. Lopez**
  US District Court, Eastern District of Michigan
  Trade secrets: analysis of GM damages and Volkswagen unjust enrichment due to alleged theft of trade secrets by former GM employee.

Antitrust Litigation

- **Joe Comes et al. v. Microsoft Corp.**
  Iowa District Court for Polk County
  Analysis of economics of computer software industry and resulting implications for market structure and firm profitability.

- **Daniel Gordon et al. v. Microsoft Corp.**
  Minnesota District Court for Hennepin County
  Analysis of economics of computer software industry and resulting implications for market structure and firm profitability.

- **Burst.Com, Inc. v. Microsoft Corp.**
  US District Court, District of Maryland
  Examination and evaluation of plaintiff's business strategy and likely implications with respect to plaintiff's claims of actual damages due to alleged antitrust violations.

- **In Re Microsoft Corp. Antitrust Litigation – All Purchaser Actions**
  US District Court, District of Maryland
  Analysis of economics of computer software industry and resulting implications for market structure and firm profitability.

- **Microsoft I-V Cases**
  Superior Court of The State of California, for The City and County of San Francisco
  Analysis of economics of computer software industry and resulting implications for market structure and firm profitability.

- **Vitamin Antitrust Litigation**
  US District Court, District of Columbia
  Preliminary analysis of factors affecting supply and demand for Vitamin C.

- **Industrial Silicon Antitrust Litigation**
  US District Court, Western District of Pennsylvania
  Analysis of issues related to likelihood of successful cartelization in production of industrial ferrosilicon, magnesium ferrosilicon, and silicon metal.

- **Independent Service Provider v. IBM**
  Texas State Court, Corpus Christi
  Analysis of issues related to liability and damages including definition of relevant market, assessment of market concentration, and evaluation of antitrust damages.

SELECTED NON-LITIGATION CONSULTING ASSIGNMENTS

- **Intellectual Property Valuation**
  Assist clients with interpretation and/or negotiation of license terms for patented technology in a variety of fields, including consumer products, pharmaceuticals, and semiconductors.

- **Corporate Committee of the American College of Nuclear Physicians**
  Analyses of the clinical and economic value of nuclear medicine in cardiology and oncology.

- **Lincoln General Hospital**
  Business valuation of two health care providers for use in determining relative shares of the parties in a joint venture.

- **Pharmaceutical Partners for Better Health Care**
  Comprehensive study of the Canadian health care system with particular emphasis on the effects of potential reforms on the pharmaceutical industry.

PUBLICATIONS

"Patent Damages in US Courts: Overview of Current State of Play," (with J. Jarosz, J. McLean, and R. Vigil), *IAM Yearbook 2019: Building IP Value in the 21st Century*, 2018.

"Recently Released FDA Guidance and Biosimilar Development: Implications for the Litigation Environment," (with G. Long), *Update: Food and Law, Regulation and Education*, March 2012, pp. 19–21.

"The 25% Rule Lives On," (with J. Jarosz and M. Wagner), *IP Law 360*, September 8, 2010.

"Licensing in the Presence of Technological Standards," (with J. Browning), *The Licensing Journal*, Volume 29 No. 7, August 2009, pp. 18–29.

"Use of the 25 Per Cent Rule in Valuing IP," (with R. Goldscheider and J. Jarosz), *les Nouvelles*, Volume XXXVII No. 4, December 2002, pp. 123–133.

"Clinical and Economic Value of Cardiovascular Nuclear Medicine," monograph published by *Meniscus Health Care Communications*, (with K. Neels), 1996.

"The Health Care System in Canada," (with R. Rozek), Chapter 4, *Financing Health Care*, edited by U. Hoffmeyer and T. McCarthy, Kluwer Academic Publishers, 1994.

"Discounted Cash Flow Analysis in Patent Infringement Litigation," (with R. Rozek), *Licensing Economics Review*, Volume 1, August 1991, pp. 7–10.

PRESENTATIONS AND SPEAKING ENGAGEMENTS

"Why Has the U.S. Biosimilar Experience Not Yet Lived Up to the Hype?" Analysis Group Law & Economics Symposium: Current Topics in Life Sciences, May 2019 (Anthony LoSasso, Richard Mortimer, and Paul Greenberg).

"ITC Section 337 Investigations: Trends and Significant Court Rulings in 2018," The Knowledge Group Webinar, January 2019 (with Jordan Coyle, Stephen Akerley, and Daniel McGavock).

"ITC Section 337 Litigation & Enforcement: A Look Back and a Sneak Peek to the Future," The Knowledge Group Webinar, January 2018 (with Gary Hnath and Eric Schweibenz).

"ITC Section 337 Litigation: Tips & Strategies for your Firm," The Knowledge Group Webinar, September 2017 (with Jordan Coyle, Edward Donovan, Eric Schweibenz, and Pallavi Seth).

"ITC Section 337 Investigations: Your Thorough Guide for 2017 and Beyond," The Knowledge Group Webinar, May 2017 (with Edward Donovan, Blaney Harper, and P.J. McCarthy).

"IP Valuation: Practical Guide on Effective Methods and Approaches for 2015 and Beyond," The Knowledge Group Webinar, October 2015 (with Chuck Faunce and Philip Green).

"Trolls, NPEs, and PAEs 'Oh My' – Sorting out Remedies in Patent Infringement Litigation," American Law Institute Continuing Legal Education, September 2013 (with Krish Gupta and Peter Strand).

"The Evolution of License Comparability in the Estimation of Reasonable Royalty Damages," West Legal Education Center Webinar, July 2013 (with John Jarosz).

"Taking and Defending Expert Depositions," Practicing Law Institute, Taking and Defending Depositions Seminar, March 2013 (with Kimo S. Peluso and Jack G. Stern).

"Taking and Defending Expert Depositions," Practicing Law Institute, Taking and Defending Depositions Seminar, May 2012 (with Kimo S. Peluso and Jack G. Stern).

"Calculating Reasonable Royalty Damages after Uniloc v. Microsoft: An Economic Perspective," Intellectual Property Law Section of the DC Bar, July 2011 (with Peter Strand).

"Patent Infringement: Calculating Royalty Damages in a Post-Uniloc World," Strafford Publications Webinar, March 2011 (with Paul Michel, George Pappas, and John Jarosz).

"Clearing the Way for Biosimilars: New Complexities Around Competition and Consumer Harm," ABA Antitrust Section Teleseminar, February 2011 (Moderator, with Panelists: Seth Silber, Iain Cockburn, Julie McEvoy, and Matt Cantor)

"Damages Apportionment After Lucent," The 10th Anniversary Wilmer Hale Intellectual Property Conference, May 2010 (with Michael R. Heyison and Dominic E. Massa).

"Licensing in the Presence of Technological Standards," Licensing Executives Society, Annual Meeting, October 2008.

"Reasonable Royalty Determination in the Presence of Standards and University Licensing," Law Seminars International, Calculating and Providing Patent Damages Workshop, October 2006.

"Providing Effective Royalty Testimony," Licensing Executives Society/Association of University Technology Managers Spring Meeting (Workshop 4-H), May 2006 (with John Jarosz and Lisa Pirozzolo).

"Meeting the Standards for Price Erosion and Convoyed Sales," Law Seminars International, Calculating and Providing Patent Damages Workshop, February 2006.

"Intellectual Property Damages from an Economist's Perspective," DC Bar Association, Trade Secret Section, November 2005 (with John Jarosz and Abram Hoffman).

"Factors affecting Royalties," Licensing Executive Society Annual Meeting (Workshop 2-M), October 2005 (with Robert Vigil).

"Trade Secrets Damages: What Can A Successful Claimant Expect to Recover?" Trade Secrets Committee of the Intellectual Property Law Section of the DC Bar, February 2005.

"Economics of Price Erosion and Lost Convoyed Sales," Law Seminars International, Calculating and Proving Patent Damages Workshop, March 2004.

"An Economist's Perspective on Reach-Through Royalties," Law Seminars International, Calculating and Proving Patent Damages: Recent Developments and New Tools for Success, June 2003.

"Trade Secrets Damages and Recent Developments," Trade Secrets Committee of the Intellectual Property Law Section of the DC Bar, May 2002.

"Industry Royalty Rates and Profitability: An Empirical Test of the 25% Rule," Licensing Executives Society Annual Meeting (Workshop 3-L), October 2001 (with John Jarosz and Robert Vigil).

"Estimating the Economic Value of Trade Secrets," U.S. Sentencing Commission (USSC) Symposium on Federal Sentencing Policy for Economic Crimes and New Technology Offenses, October 13, 2000.

"Estimating Economic Recovery in Trade Secrets Cases," Trade Secrets Committee of the Intellectual Property Law Section of the DC Bar, September 1999.

"Industry Royalty Rates and Profitability: An Empirical Test of the 25% Rule," Licensing Executives Society Annual Meeting, (Workshop 3-11), October 1998 (with John Jarosz).

"Royalty Rates and Awards in Patent Infringement Cases: 1916–1996," Licensing Executives Society Annual Meeting, November 1997 (with John Jarosz).

PROFESSIONAL AFFILIATIONS

American Economic Association (AEA)

Licensing Executives Society (LES)

IAM Patent 1000 (2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021): The World's Leading Patent Practitioners – Economic Experts

ATTACHMENT D

Joshua W. Phinney, Ph.D., P.E.
Principal Engineer | Electrical Engineering & Computer Science
420 Lexington Avenue, Suite 1740 | New York, NY 10170
(212)895-8125 tel | jphinney@exponent.com

Professional Profile

Dr. Phinney's background is in electrical and electronic engineering, particularly related to power electronics, electromagnetics, and electromechanics. His specialties include power supplies, radio- frequency electronics, control systems, printed circuits, integrated-circuit packaging, magnetics design, and power transmission and distribution. He has related experience in embedded software, acoustics, and numerical methods for optimization and simulation.

At Exponent, Dr. Phinney has assisted clients with identifying the root cause of failures in mobile electronic devices, industrial and automotive controllers, capacitors, transformers, amplifiers, and power supplies. He has testified in patent and trade secret litigation regarding computer hardware and software, audio circuitry, mobile telephones, tablets, power supplies, control systems, hard disk drives, and electronic instruments. In addition, Dr. Phinney has assisted clients with electromagnetic assessment issues pertaining to utility and communication infrastructure. These issues include permitting, interference, and environmental impact of radar, AC and HVDC transmission lines, substations, photovoltaic installations, generators, broadcast antennas, and electrified mass transit systems.

Dr. Phinney received his Ph.D. in Electrical Engineering from the Massachusetts Institute of Technology. His doctoral work centered on miniaturization of power converters and electromechanical power conversion. He has related experience in radio-frequency electronics (particularly phase-locked loops and RF amplifiers), network synthesis, system identification, and control. Dr. Phinney is the co-inventor on patents for improving the performance of capacitors, EMI filters, and common-mode chokes.

Academic Credentials & Professional Honors

Ph.D., Electrical Engineering, Massachusetts Institute of Technology (MIT), 2005

S.M., Electrical Engineering, Massachusetts Institute of Technology (MIT), 2001

B.S., Electrical Engineering, University of Illinois, Chicago, summa cum laude, 1999

B.A., Ancient and Classical Languages, Philosophy, Wheaton College, 1995

2004 IEEE Power Electronics Society Transactions Prize Paper Award (for the paper "Filters with Active Tuning for Power Applications")

2003 William M. Pormoy Prize Paper Award (Awarded by the Power Electronics Devices and Components Committee of the IEEE Industry Applications Society)

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Licenses and Certifications

Licensed Professional Electrical Engineer, New York, #084129

Academic Appointments

Adjunct Professor, Hofstra University, 2008

Professional Affiliations

Institute of Electrical and Electronic Engineers (member)

Tau Beta Pi

Languages

German

Patents

U.S. Patent No. 7,242,269: Filter Having Parasitic Inductance Cancellation, July 2007 (with D.J. Perreault and T.C. Neugebauer).

U.S. Patent No. 6,937,115: Filter Having Parasitic Inductance Cancellation, February 2002 (with D.J. Perreault and T.C. Neugebauer).

Publications

Phinney JP, Perreault DJ, Lang JH. Synthesis of lumped transmission-line analogs. IEEE Transactions on Power Electronics 2007; 22(4):1531-1542.

Phinney JP, Perreault DJ, Lang JH. Radio-frequency inverters with transmission-line input networks. IEEE Transactions on Power Electronics 2007; 22(4):1154-1161.

Phinney JP, Perreault DJ, Lang JH. Multi-resonant microfabricated inductors and transformers. IEEE Power Electronics Specialists Conference 2004; 4527-4536.

Phinney JP, Perreault DJ. Filters with active tuning for power applications. IEEE Transactions on Power Electronics 2003; 18(2):636-647.

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Neugebauer TC, Phinney JP, Perreault DJ. Filters and components with inductance cancellation. IEEE Transactions on Industry Applications 2002; 939-947.

Phinney JP, Perreault DJ. Filters with active tuning for power applications. IEEE Power Electronics Specialists Conference 2001; 363-370.

Batzer MA, Arcot SS, Phinney JP, et al. Genetic variation of recent Alu insertions in human populations. Journal of Molecular Evolution 1996; 42(1):22-29.

ATTACHMENT E

Jonathan Wells, Ph.D., M.B.A.

Scottsdale, AZ, USA
Phone: +1 925 200 5124
Email: jonathan@ajisconsulting.com
Web: www.ajisconsulting.com

Wireless Communications Expertise

- Cellular Networks (2G, 3G, 4G, 5G, IS-95, GSM, EDGE, UMTS, CDMA, WCDMA, HSPA, LTE, LTE-Advanced, NR)
- Cellular Infrastructure (Handsets, Base Stations, Backhaul and RANs)
- Wireless LANs (Wi-Fi and Bluetooth)
- Wireless Standards, Rules and Regulations (3GPP, 3GPP2, IEEE, FCC, ETSI, CEPT)

- Radio Frequency (RF), Microwave and MM-Wave Devices, Systems and Networks
- RF Design, including RF Assemblies, Components and Integrated Circuits (ICs, MMICs)
- Intellectual Property, Patent Analysis and Litigation Support

Professional Summary

Dr. Wells has 35 years of wireless communications experience gained from working in three continents. He is currently an independent consultant providing expertise on cellular technologies, wireless devices, network infrastructure and wireless rules and regulations to a client base of attorneys, intellectual property organizations, investment and research institutions, public listed and private companies. Dr. Wells has over 40 academic and commercial publications and presentations, and is lead inventor on several patents. He is Senior Member of the IEEE and is author of "*Multi-Gigabit Microwave and Millimeter-Wave Wireless Communications*," Artech House, 2010.

Employment History

2007 to present   **AJIS Consulting, Pleasanton, CA** *Independent Consultant*

Provide independent technical consulting on wireless communications and emerging wireless fields.
- Technical expert support of 2G, 3G, 4G and 5G cellular and wireless patent litigation.
- Analysis of cellular and mobile wireless patents and infringing equipment.
- Cellular and wireless technology technical and industry analysis for companies, analysts and investment institutions. Research and publication of analyst reports.
- Wireless product development and marketing strategies.
- Specialized technical workshops on various wireless technologies; including cellular networks, mm-wave radios, security sensors and short range radios.
- Specialized global regulatory tasks and product approvals.

2005 to 2007   GigaBeam Corporation, Herndon, VA
Director Product Management and Global Regulatory Affairs

Responsible for product strategy for industry-transforming high data rate wireless product.
- Initiated market development in over 40 countries including in Europe, Canada, Caribbean, Latin America, Middle East and Asia.
- Participated and drove standard development in FCC, CEPT and ETSI technical meetings.

2000 to 2004   Stratex Networks (now Aviat Networks), San Jose, CA
Director Product Development

Responsible for global product development of high-end digital microwave radios primarily for cellular backhaul applications.
- Led RF/microwave development team of 35 engineers based in two continents.
- Technical leadership of flagship Eclipse product, shipping over 250,000 units.
- Technical management of overseas manufacturing subcontractors.

1998 to 2000   Adaptive Broadband (now GE Digital Energy), Rochester, NY
1999-2000: Director Wideband Products, 1998-9: Engineering Group Leader

Full responsibility for the Terrestrial Infrastructure Group, providing telecommunications products for cellular and private network applications.
- P&L responsibility for $4M wireless division.
- Responsible for the development of a family of digital radios and associated switching / multiplexing equipment.

1994 to 1998   MAS Technology (now Aviat Networks), Wellington, New Zealand
1995-98: RF Group Manager, 1994-95: Senior RF Design Engineer

Responsible for RF hardware development for cellular and telecommunications applications.
- Developed three generations of wireless transmission, switching and multiplexing products.
- Design and sustaining responsibility for satellite ground station terminals.
- Responsible for company's European regulatory approvals.

1993 to 1994   Matra Marconi Space, Portsmouth, UK *Senior Design Engineer*
- Developed GaAs MMIC mixer and MIC transmitter board for two satellite payloads.
- Theoretical analysis and modeling of low noise VCOs.

1990 to 1992   University of Bath, Bath, UK *Post Doctoral Research Officer*
- Fabricated novel quantum amplifiers in clean room environment.
- Developed computer models to predict semiconductor device performance.

1987 to 1990   British Aerospace, Filton, Bristol, UK *Engineer (part time)*
- Designed and fabricated novel mixer devices, to support PhD research.

1985 to 1986   Plessey Research, Caswell, UK *Engineer (1 year placement)*
- Developed high speed fiber optic transmitter / receiver devices.

Education

1998   M.B.A., Massey University, New Zealand
- Awarded with Distinction (top 10% of class)
- Thesis: "Venture Capital: Does It Exist In New Zealand?"

1991   Ph.D., University of Bath, United Kingdom
- Thesis: "Design and optimisation of a millimetre-wave balanced mixer"
- Sponsored by British Aerospace PLC, Bristol, UK and Science and Engineering Research Council (SERC), UK

1987   B.Sc. Physics with Physical Electronics, University of Bath, United Kingdom
- Awarded with First Class Honours, graduated third in class
- Final year project: "Fibre optic interferometer for location of disturbances"

University Instruction

2014   Intellectual Property: Patent Law, Prof. Mark Lemley, Stanford Law School, Stanford University, CA, USA

2004   AeA/Stanford Executive Institute for Management of High-Technology Companies, Stanford Graduate School of Business, Stanford University, CA, USA

Expert Witness Experience

Represented <u>underlined</u> party.

Mar 2022 to Present	*Ericsson v. <u>Apple</u>*, ITC 337-TA-1299 Case: ITC hearing related to two 4G/LTE and 5G/NR patents. Role: Testifying expert for respondent.
Oct 2021 to Jan 2022	<u>*OnePlus*</u> *v. Bell Northern Research*, IPR2022-00046, 00047, 00048 Case: *Inter Partes* Reviews of three cellular and general wireless patents. Role: Testifying expert for petitioner. Provided multiple declarations.
Sept 2021 to Dec 2021	<u>*Apple*</u> *v. Bell Northern Research*, IPR2021-01588, 01589, 01590, 01591 Case: *Inter Partes* Reviews of four cellular and general wireless patents. Role: Testifying expert for petitioner. Provided multiple declarations.
July 2021 to Present	<u>*Apple*</u> *v. Ericsson*, IPR2021-00446, 00450, IPR2022-00338, IPR2022-00340, IPR2022-00456, IPR2022-00462, IPR2022-00468 and IPR2022-00626 Case: *Inter Partes* Reviews of multiple 4G/LTE, 5G/NR and Wi-Fi patents. Role: Testifying expert for petitioner. Provided multiple declarations.

Mar 2021 to Present	*IP Bridge v. Ericsson*, *IP Bridge v. Nokia*, 2:21-cv-00213, 00215, E.D. Tex Case: Patent case related to multiple 4G/LTE and 5G patents. Role: Testifying expert for plaintiff. Provided two expert reports. Deposed.
Jan 2021 to Oct 2021	*Philips v. Quectel et al.*, ITC Inv. No. 337-TA-1240 Case: ITC hearing related to two 4G/LTE patents. Role: Testifying expert for respondent. Provided expert report and witness statement. Deposed. Testified at hearing.
Jan 2021 to Present	*Quectel v. Philips*, IPR2021-00562 Case: *Inter Partes* Review of one 3G patent. Role: Testifying expert for petitioner. Provided declaration. Deposed twice.
Jan 2021 to May 2021	*Samsung v. Ericsson*, IPR2021-00446, 00450 Case: Two *Inter Partes* Reviews of two 4G/LTE patents. Role: Testifying expert for petitioner. Provided two declarations.
Dec 2020 to Present	*Finesse Wireless v. AT&T and Verizon*, 2:21-cv-00063, E.D. Tex Case: Patent case related to two wireless communication patents. Role: Testifying expert for plaintiff. Provided declaration. Deposed.
Dec 2020 to May 2021	*Ericsson v. Samsung*, ITC Inv. No. 337-TA-1425 Case: ITC hearing related to multiple 4G/LTE and 5G patents. Role: Testifying expert for respondent.
Dec 2020 to May 2021	*Ericsson v. Samsung*, 2:21-cv-10, E.D. Tex Case: Patent case related to multiple 4G/LTE and 5G patents. Role: Testifying expert for defendant.
Dec 2020 to May 2021	*Samsung v. Ericsson*, IPR2021-00487, 00508, 00568, 00569 Case: Four *Inter Partes* Reviews of four 4G/LTE and 5G patents. Role: Testifying expert for petitioner. Provided four declarations.
Nov 2020 to Nov 2020	*Huawei v. WSOU*, IPR2021-00226, 00227 Case: Two *Inter Partes* Reviews of two cellular patents. Role: Testifying expert for petitioner. Provided two declarations.
Nov 2020 to Apr 2021	*Sol IP v. Qualcomm*, 6:21-cv-00270, W.D. Tex Case: Patent case related to multiple 4G/LTE, 5G and Wi-Fi patents. Role: Consulting expert for plaintiff.
May 2020 to Aug 2020	*AT&T v. KAIFI*, IPR2020-00889 Case: *Inter Partes* Review of one cellular patent. Role: Consulting expert for patent holder.
Mar 2020 to Sept 2020	*Samsung v. Bell Northern Research*, IPR2020-00675, 00676, 00697, 00698 Case: Four *Inter Partes* Reviews of three cellular patents. Role: Testifying expert for petitioner. Provided multiple declarations.
Mar 2020 to Present	*Pinn v. Apple, Google, and Samsung*, 8:19-cv-1805, 1840, and 1856, C.D. Cal Case: Patent case related to three Bluetooth patents.

	Role: Testifying expert for defendants. Provided multiple declarations, two expert reports. Deposed.
Feb 2020 to April 2020	*Uniloc v. Samsung,* 2:19-cv-00259, E.D. Tex Case: Patent case related to Bluetooth patent. Role: Testifying expert for defendant. Provided declaration.
Jan 2020 to Sept 2020	*Apple v. Optis,* IPR2020-00465 Case: *Inter Partes* Review of one 4G/LTE patent. Role: Testifying expert for petitioner. Provided declaration.
Dec 2019 to Nov 2021	*Sanyo v. Intel,* C.A. No. 2018-0723-MTZ, Court of Chancery, Del Case: Contract dispute related to wireless devices. Role: Testifying expert for defendant. Provided two expert reports. Deposed.
Nov 2019 to Mar 2022	*Overhead Door v. Chamberlain Group,* ITC Inv. No. 337-TA-1209 Case: ITC hearing related to two wireless transmission and reception patents. Role: Testifying expert for complainant. Provided two expert reports, two witness statements, and a post-trial declaration. Deposed. Testified at hearing.
Nov 2019 to Dec 2019	*LG Electronics v. Bell Northern Research,* IPR2020-00318 Case: *Inter Partes* Review of Wi-Fi patent. Role: Testifying expert for petitioner. Provided declaration.
Nov 2019 to Dec 2019	*Bell Northern Research v. LG Electronics,* 3:18-cv-02864, S.D. Cal Case: Patent case related to two Wi-Fi patents. Role: Testifying expert for defendant.
Sept 2019 to Aug 2020	*ZTE, Coolpad v. Bell Northern Research,* IPR2019-01319, 01320, 01365 Case: Three *Inter Partes* Reviews of three cellular patent. Role: Testifying expert for petitioner. Provided three declarations.
Sept 2019 to Aug 2020	*Bell Northern Research v. Coolpad, ZTE,* 3:18-cv-01783, 01786, S.D. Cal Case: Patent case related to three cellular patents. Role: Testifying expert for defendant. Provided expert report. Deposed.
July 2019 to Sept 2019	*Harris v. Huawei,* 2:18-cv-004390JRG, 2:19-cv-00222, E.D. Tex Case: Patent case related to 4G/LTE patents. Role: Testifying expert for defendant. Provided declaration.
June 2019 to Aug 2021	*Optis v. Apple,* 2:19-cv-00066, E.D. Tex Case: Patent case related to six 4G/LTE patents. Role: Testifying expert for defendant. Provided declaration and three expert reports. Deposed. Testified at trial.
June 2019 to June 2019	*TC Tech v. Sprint,* 1:16-cv-00153, D. Del Case: One cellular patents. Role: Consulting expert for plaintiff.
April 2019 to July 2019	*Samsung v. Sharp,* no case numbers Case: Three *Inter Partes* Reviews of cellular patents. Role: Consulting expert for petitioner.

April 2019 to Oct 2019	*Huawei v. Bell Northern Research,* IPR2019-01172, 01174, 01175, 01185, 01186, and 01439 Case: Six *Inter Partes* Reviews of cellular, Wi-Fi and general wireless patents. Role: Testifying expert for petitioner. Provided six declarations.
April 2019 to Oct 2019	*Bell Northern Research v. Huawei,* 3:18-cv-01785, S.D. Cal Case: Patent case related to eight cellular, Wi-Fi and general wireless patents. Role: Testifying expert for defendant. Provided two declarations.
Mar 2019 to Mar 2019	*Cell Trans v. LG Electronics,* 3:18-cv-01955, S.D. Cal Case: Patent case related to one cellular / Wi-Fi patent. Role: Testifying expert for defendant.
Jan 2019 to Aug 2019	*Uniloc v. Microsoft,* 8:18-cv-2053, 2054, 2224, C.D. Cal Case: Patent cases related to multiple wireless patents. Role: Testifying expert for defendant. Provided declaration.
Dec 2018 to Mar 2019	*DSS v. Apple,* 4:14-cv-05330, N.D. Cal Case: Patent case related to one Bluetooth patent. Role: Consulting expert for defendant.
Nov 2018 to April 2019	*Qualcomm v. Apple,* 37-2017-00041389, Sup. Ct. Cal Case: Case related to trade secret misappropriation. Role: Testifying expert for defendant. Provided two declarations.
Nov 2018 to Dec 2018	*Sprint v. Intellectual Ventures,* IPR2018-01764, 1765 Case: Two *Inter Partes* Reviews of two wireless communication patents. Role: Technical expert for patent owner.
Nov 2018 to Feb 2019	*Maxell v. Huawei,* 5:18-cv-00033, E.D. Tex Case: Patent case related to three cellular and cellular / Wi-Fi patents. Role: Testifying expert for defendant. Provided declaration. Deposed.
Aug 2018 to June 2019	*Uniloc v. Samsung,* 2:18-cv-00040, 41, 42, 44, E.D. Tex Case: Four patent cases related to four cellular, Wi-Fi and Bluetooth patents. Role: Technical expert for defendant. Provided multiple declarations and two expert reports. Deposed twice.
July 2018 to April 2020	*Sol IP v. AT&T, Sprint and Verizon,* 2:18-cv-00526, 527 and 528, E.D. Tex Case: Three patent cases related to twenty 4G/LTE cellular and seven Wi-Fi patents. Role: Testifying expert for plaintiff. Provided multiple declarations and three expert reports. Deposed.
July 2018 to June 2019	*Ericsson v. Intellectual Ventures,* IPR2018-01185, 1289 Case: Two *Inter Partes* Reviews of two wireless communication patents. Role: Technical expert for patent owner.
July 2018 to June 2019	*Ericsson v. Intellectual Ventures,* IPR2018-01380 Case: *Inter Partes* Review of wireless communication patent. Role: Consulting expert for patent owner.

Nov 2017 to Apr 2019	*Huawei v. Optis Wireless,* IPR2018-00653, 655 Case: Two *Inter Partes* Reviews related to 4G/LTE patent. Role: Testifying expert for petitioner. Provided multiple declarations. Deposed twice.
Nov 2017 to Nov 2018	*Huawei v. Optis Wireless,* IPR2018-00807 Case: *Inter Partes* Reviews related to 4G/LTE patent. Role: Testifying expert for petitioner. Provided declaration.
Nov 2017 to Nov 2018	*IP Bridge v. TCL Communications,* 1:15-cv-00634, D. Del. Case: Patent case related to two 4G/LTE patents. Role: Testifying expert for plaintiff. Provided expert report. Deposed. Testified at trial.
Oct 2017 to Dec 2017	*Sharp v. Hisense,* ITC Inv. No. 337-TA-1072 Case: ITC hearing related to two Wi-Fi patents. Role: Consulting expert for respondent.
Aug 2017 to Aug 2018	*Optis Wireless v. Huawei,* 2:17-cv-00123, E.D. Tex Case: Patent case related to three cellular patents. Role: Testifying expert for defendant. Provided two expert reports and multiple declarations. Deposed. Testified at trial.
Aug 2017 to Aug 2017	*Securus v. Global Tel*Link,* PGR2017-00005 Case: Post grant review proceeding related to one wireless communication patent. Role: Technical expert for patent owner. Provided declaration.
June 2017 to Jan 2019	*Huawei v. Maxell,* IPR2018-00251 Case: *Inter Partes* Review related to wireless communication patent. Role: Testifying expert for petitioner. Provided declaration. Deposed.
June 2017 to Dec 2017	*Hitachi Maxell v. Huawei,* 5:16-cv-00178, E.D. Tex Case: Patent case related to three cellular and cellular / Wi-Fi patents. Role: Testifying expert for defendant. Provided declaration.
Nov 2016 to April 2019	*Apple v. Qualcomm,* 3:17-cv-00108, S.D. Cal Case: Case related to licensing of cellular and wireless patents. Role: Testifying expert for plaintiff. Provided expert report and declaration. Deposed twice.
Nov 2016 to Aug 2018	*Tektronix v. Rohde & Schwarz,* ITC Inv. No. 337-TA-1104 Case: ITC hearing related to two radio frequency test and measurement equipment patents. Role: Testifying expert for respondent. Provided expert report.
Jun 2016 to Jan 2017	*Arbitration on behalf of LG Electronics* Case: Confidential arbitration regarding patent portfolio license. Role: Testifying expert for respondent. Provided two expert reports. Testified at hearing.

Apr 2016 to Nov 2017	*Huawei v. T-Mobile,* 2:16-cv-00055, 2:16-cv-00056, E.D. Tex Case: Patent case related to five cellular and cellular / Wi-Fi handover patents. Role: Testifying expert for plaintiff. Provided two expert reports and multiple supplements. Deposed twice.
Feb 2016 to July 2016	*Unwired Planet v. Huawei and Samsung,* HP-2014-000005, High Court of Justice, England Case: UK patent court case related to four European 2G, 3G and 4G/LTE cellular communication patents. Role: Testifying expert for defendant. Provided two expert reports.
Jan 2016 to April 2017	*Apple, Microsoft et al v. Evolved Wireless,* IPR2016-00981, IPR2016-01177, IPR2016-01185, IPR2016-01208/01209, IPR2016-01228/01229 Case: *Inter Partes* Reviews of five wireless communication patents. Role: Technical expert for petitioners. Provided five declarations. Deposed four times.
July 2015 to June 2016	*Ericsson v. Intellectual Ventures,* IPR2015-01367 Case: *Inter Partes* Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
July 2015 to Feb 2016	*Core Wireless v. LG, Google et al,* 2:14-cv-00911 and 00912, E.D. Tex Case: Patent case related to location using cellular devices. Role: Testifying expert for defendants. Provided expert report.
May 2015 to May 2016	*Adaptix v. Ericsson et al,* 6:14-cv-00501, 502, 503, 6:15-cv-00042. E.D. Tex Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff. Provided two expert reports and multiple declarations.
May 2015 to Dec 2015	*Adaptix v. Alcatel-Lucent et al,* 6:15-cv-00041, E.D. Tex Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff.
April 2015 to Dec 2015	*Ericsson v. Apple,* ITC Inv. No. 337-TA-952 Case: ITC hearing related to Bluetooth and cellular / Wi-Fi device patents. Role: Testifying expert for respondent. Provided two expert reports and two witness statements. Deposed. Testified at hearing.
Dec 2014 to Oct 2015	*Arbitration on behalf of Huawei* Case: Confidential arbitration regarding patent portfolio license. Role: Testifying expert for respondent. Provided two expert reports.
Dec 2014 to Sept 2015	*Ericsson v. Intellectual Ventures,* IPR2014-01471 Case: *Inter Partes* Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Dec 2014 to Sept 2015	*Ericsson v. Intellectual Ventures,* IPR2014-01412 Case: *Inter Partes* Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.

Nov 2014 to Present	*Regents of the University of Minnesota v. AT&T et al,* 0:14-cv-4666, D. Min Case: Patent case related to five 4G/LTE communication patents. Role: Testifying expert for plaintiff. Submitted multiple declarations.
Nov 2014 to May 2015	*Arbitration on behalf of Samsung* Case: Confidential arbitration regarding patent portfolio license. Role: Testifying expert for respondent. Provided two expert reports. Testified at hearing.
Oct 2014 to Aug 2015	*Ericsson v. Intellectual Ventures,* IPR2014-01330 Case: *Inter Partes* Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Sept 2014 to May 2015	*Ericsson v. Intellectual Ventures,* IPR2014-00963 Case: *Inter Partes* Review of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Sept 2014 to Oct 2014	*Ericsson v. TCL Communications,* 2:14-cv-00677, E.D. Tex Case: Patent case related to a 4G/LTE communication patent. Role: Consulting expert for defendant.
Sept 2014 to Sept 2014	*Ericsson v. Intellectual Ventures,* IPR2014-00958 Case: *Inter Partes* Review of a wireless communication patent. Role: Technical expert for patent owner.
Jan 2014 to Mar 2016	*Adaptix v. Ericsson et al,* 6:12-cv-00049, 00050 and 00369, E.D. Tex Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff. Provided two expert reports. Deposed.
Jan 2014 to Dec 2015	*Adaptix v. Alcatel-Lucent et al,* 6:12-cv-00022, 00122 and 00123, E.D. Tex Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff. Provided two expert reports. Deposed. Testified at trial.
Jan 2014 to Jan 2015	*Cell and Network Selection v. AT&T et al,* 6:13-cv-00403 and 404, E.D. Tex Case: Patent case related to a 4G/LTE communication patent. Role: Testifying expert for plaintiff. Provided two expert reports. Deposed.
Oct 2013 to Jan 2014	*Ericsson v. Samsung,* 6:12-cv-00894 and 00895, E.D. Tex Case: Patent case related to 24 wireless communication patents. Role: Testifying expert for defendant.
June 2013 to Dec 2013	*Adaptix v. Ericsson,* ITC Inv. No. 337-TA-871 Case: ITC hearing related to 4G/LTE wireless communication patent. Role: Testifying expert for complainant. Provided expert report and witness statement. Deposed.
Mar 2013 to Sept 2014	*Mobile Telecommunication v. BlackBerry,* 3:12-cv-01652, E.D. Tex Case: Patent case related to five wireless communications patents. Role: Consulting expert for plaintiff.

Mar 2013 to Dec 2013	*Mobile Telecommunication v. Sprint*, 2:12-cv-00832, E.D. Tex Case: Patent case related to five wireless communications patents. Role: Consulting expert for plaintiff.
Jan 2013 to May 2014	*TracBeam v. Google*, 6:13-cv-00093, E.D. Tex Case: Patent case related to two cellphone location patents. Role: Testifying expert for defendant. Provided two expert reports. Deposed.
Jan 2013 to Sept 2013	*Ericsson v. Samsung*, ITC Inv. No. 337-TA-862 Case: ITC hearing related to seven 2G, 3G, 4G/LTE and Wi-Fi patents. Role: Testifying expert for respondent. Provided two expert reports and two Witness Statements. Deposed. Testified at hearing.
Jan 2013 to June 2013	*EON v. AT&T et al*, 3:11-cv-01555, E.D. Tex Case: Patent case related to wireless communications patent. Role: Consulting expert for plaintiff.
Nov 2012 to Oct 2013	*Cormany et. al. v. Fireman's Fund Insurance Company*, CIVDS1100146, Sup. Ct. Cal Case: Breach of contract case involving location via cell phone. Role: Testifying expert for plaintiff. Provided technical analyses. Deposed.
Oct 2012 to Dec 2012	*Drivertech v. R+L Carriers*, 2:08-cv-00862, S.D. Ohio Case: Patent case related to wireless communications patent. Role: Consulting expert for defendant. Provided technical analyses.
May 2012 to April 2013	*Sparkes Cable Company v. Rancho San Antonio Retirement Housing Corp*, 112-cv-225390, Sup. Ct. Cal Case: Breach of contract related to telecommunications network. Role: Consulting expert for defendant. Provided technical analyses.
April 2012 to Sept 2012	*EON v. T-Mobile et al*, 6:10-cv-00379, E.D. Tex Case: Patent case related to wireless communications patent. Role: Testifying expert for plaintiff. Provided expert report and declarations. Deposed.
March 2012 to April 2012	*Baker v. SLG Group*, CV-2010-901219 Case: Civil case involving location via cell phone. Role: Consulting expert for plaintiff. Provided technical analyses.
Sept 2011 to July 2012	*Samsung v. Apple*, 11-cv-01846, N.D. Cal Case: Patent case related to 3G WCDMA patent. Role: Consulting expert for defendant. Provided technical analyses.
Mar 2011 to July 2013	*Wi-LAN v. Alcatel-Lucent et al*, 6:10-cv-00521, E.D. Tex Case: Patent case related to four 3G HSDPA patents. Role: Testifying expert for plaintiff. Provided two Expert Reports, Supplement to Expert Report and Declarations. Deposed. Testified at trial.
Oct 2010 to Jan 2011	*People of the State of California v. Wandrey*, CR920809 Case: Criminal murder case involving location via cell phone. Role: Consulting expert for defendant. Provided technical analyses.

Sept 2010 to Oct 2010	*People of the State of California v. Tran,* CC826024 Case: Criminal murder case involving location via cell phone. Role: Consulting expert for defendant. Provided technical analyses.
May 2010 to Apr 2011	*People of the State of California v. Rivas & Carrillo,* SS090603A/B, SS110071A/B Case: Criminal murder case involving location via cell phone. Role: Testifying expert for defendant. Provided expert report. Testified at trial.
June 2009 to June 2010	*American Traffic Solutions v. Redflex Traffic Systems,* CV 08-2051-PHX, D. Arizona Case: Unfair competition related to FCC authorization of speed radars. Role: Testifying expert for plaintiff. Provided expert report and multiple declarations.

Professional Affiliations

2011 – Present	Toastmasters International
2008 – Present	IEEE Consultants' Network of Silicon Valley (CNSV) (Treasurer, 2017-18, Vice-chair, 2015-16, Treasurer, 2013-14; Co-chair, Intellectual Property Special Interest Group, 2010-12)
1995 – Present	Institute of Electrical and Electronic Engineers (IEEE) (Senior Member since 1999; Member, IEEE Communications Society; Member, IEEE Microwave Theory and Techniques Society)

Awards, Achievements and Professional Service

2019	Awarded IEEE Santa Clara Valley Section 2019 "Outstanding Engineer." Citation: "For his acknowledged expertise in the field of wireless communications and wireless technology, for his willingness to mentor others in the field, and for his work in the development of the next generation of creative and innovative technical products."
2016	Awarded Distinguished Toastmaster (DTM), Toastmasters International.
2016	Interviewed as Telecommunications Expert by CNN affiliate on national TV.
2013	Guest speaker, UC Berkeley course IEOR 190G: Wireless and Mobile Devices Patents – Patent Engineering
2012	Technical Reviewer, IEEE International Microwave Symposium, IMS2012
2011	Technical Reviewer, IEEE International Microwave Symposium, IMS2011
2010	Guest speaker, Carnegie Mellon University course 96-833: Fundamental Consulting Skills

2009	Reviewer, US Government's Broadband Technology Opportunity Program (BTOP) and Broadband Initiatives Program (BIP), part of American Recovery and Reinvestment Act of 2009
2009	Expert Advice columnist, Microwave Journal
2009	Organizer and session chair, IEEE International Microwave Symposium, IMS2009
2008	Co-chair and organizer, IWPC workshop on Millimeter-Wave Security Sensors
2008	Co-chair, IWPC workshop on Extending the Life of GSM & EDGE Networks
2008	Co-chair, IWPC workshop on Wireless IP/Ethernet Backhaul for Next Generation Mobile Networks
2002 – 2006	Member and deputy chair, Wireless Communications Association (WCA) 40+ GHz Spectrum Development Committee
2001 – 2004	Member, Cal Poly Electrical Engineering Industrial Advisory Committee
1999	Elected as Senior Member, IEEE
1993 – 2002	Member, Institution of Electronic Engineers (MIEE)
1995	Registered as Chartered Engineer (CEng)

Patents

US 7,623,829, "Transceiver power detection and control architecture," issued Nov 24, 2009

US 7,236,745, "Transceiver power detection architecture," issued June 26, 2007

CN 1,757,186, "Transceiver power detection architecture," published Apr 5, 2006

EP 1,599,952, "Transceiver power detection architecture," published Nov 30, 2005

WO 2004/080035, "Transceiver power detection architecture," published Sept 16, 2004

Publications and Presentations

Books and Theses

J.A. Wells, *"Multi-Gigabit Microwave and Millimeter-Wave Wireless Communications,"* Artech House, Boston, Sept. 2010 (ISBN 1608070824)

J.A. Wells, *"Venture Capital: Does It Exist In New Zealand?"* MBA Thesis, Massey University, 1998

J.A. Wells, *"The Design and Optimisation of a Millimetre-Wave Balanced Mixer,"* PhD Thesis, University of Bath, 1991

Television

Nancy Grace, HLN (formerly CNN Headline News), April 27, 2016 (Interviewed as Telecommunications Expert)

Nancy Grace, HLN, April 26, 2016 (Interviewed as Telecommunications Expert)

Published Research Reports

J. Madden and J.A. Wells, *"Backhaul, Midhaul, and Fronthaul for the HetNet,"* Mobile Experts, USA, Dec. 2015

J.A. Wells, *"Backhaul and Fronthaul for the HetNet,"* Mobile Experts, USA, Nov. 2014

J.A. Wells, *"Backhaul for Small Cells*, 2nd Edition" Mobile Experts, USA, Nov. 2012

J.A. Wells, *"Backhaul for Small Cells,"* Mobile Experts, USA, Oct. 2011

Journal and Magazine Publications

J.A. Wells, "The Seven Rules for Hiring a Wireless Technology Expert," *New Matter; Official Publication of the Intellectual Property Section of the State Bar of California,* Vol. 35, No. 4, pp. 5-6, Dec. 2010

J.A. Wells, "MM-Waves in the Living Room: The Future of Wireless High Definition Multimedia Connectivity," *Microwave Journal,* Vol. 52, No.8, pp. 72-84, Aug. 2009

J.A. Wells, "Faster Than Fiber: The Future of Multi-Gb/s Wireless," *IEEE Microwave Magazine,* Vol. 10, No.3, pp. 104-112, May 2009 (Invited Paper)

J.A. Wells, "Multigigabit Wireless Technology at 70, 80 and 90 GHz," *RF Design,* pp. 50-58, May 2006

J.A. Wells, "Gigabit per Second Wireless Backhaul at 70 and 80 GHz for WiMAX Networks," *Focus on Technology* supplement in *Wireless Design and Development,* pp. S6-S8, May 2006

J.A. Wells, "New Multi-Gigabit Wireless Systems Satisfy High Security Rapid Response Applications," *Military Embedded Systems,* Vol. 2, No. 1, pp. 22-26, Spring 2006

J.A. Wells, "Multi-Gigabit Connectivity at 70, 80 and 90 GHz," *Microwave Journal,* pp. 128-135, July 2005

J.A. Wells, "Millimeter Wave Point-To-Point Radios," *Applied Microwave and Wireless,* pp. 81-82, Aug. 2002 (Guest Editorial)

J.A. Wells and N.J. Cronin, "Theoretical Analysis of Air Bridging and Back Etching Techniques on the Shunt Capacitance of Planar Subharmonic Mixer Diodes," *IEE Proceedings - Part H,* Vol. 140, No. 6, pp. 474-80, Dec. 1993

J.A. Wells and N.J. Cronin, "Frequency Dependent Simulation of Planar Millimeter-Wave Mixer Diodes," *17th International Conference on Infra-Red and Millimeter Waves Digest,* USA, pp. 214-5, Dec. 1992

J.A. Wells and N.J. Cronin, "Determination and Reduction of the Capacitance Associated with the Bonding Pads of Planar Millimeter-Wave Mixer Diodes," *IEEE Microwave and Guided Wave Letters,* Vol. 2, No. 7, pp. 297-9, July 1992

J.A. Wells and N.J. Cronin, "Planar Schottky-Diode Devices for Millimetre-Wave Balanced Mixer Applications," *21st European Microwave Conference Digest*, Germany, pp. 370-5, Sept. 1991

N.J. Cronin, R. James and J.A. Wells, "Subharmonic Mixers for Short Millimetre Wavelengths," *16th International Conference on Infra-Red and Millimeter Waves Digest*, Switzerland, p. 143, Aug. 1991

J.A. Wells, N.J. Cronin and P.H. Reece, "A Rugged 94GHz Crossbar Balanced Mixer," *IEE Proceedings - Part H*, Vol. 137, No. 4, pp. 235-7, Aug. 1990

J.A. Wells, N.J. Cronin and P.H. Reece, "A Rugged 94GHz Millimetre-Wave Balanced Mixer," *1st International Conference on Millimeter Waves and Far-Infrared Technology Digest*, China, pp. 254-6, June 1989

Online Publications

J.A. Wells, *"Backhaul for small cells: A 1.5 billion dollar market opportunity,"* EE Times, *Design Article, Nov. 2011*

J.A. Wells, *"The Gigabit Millimeter-Wave Superhighway,"* Microwave Journal, *Expert Advice Blog, Aug. 2009 (Invited Column)*

Lectures and Conference Presentations

"The Role of the Expert Witness: A Panel Discussion," IEEE Consultants' Network of Silicon Valley, USA, Apr. 2019 (Panel Moderator)

"Taking the Pulse of 5G: The Status of the Next Gen Cellular Network," IEEE Consultants' Network of Silicon Valley, USA, Jan. 2019

"5G and the Future of Cellular," *IEEE Consultants' Network of Silicon Valley*, USA, Mar. 2016

"SON [Self-Organizing Networks]: The Enabling Technology in Small Cell Networks," *Wireless Communications Alliance (WCA)*, USA, April 2014 (Panel Moderator)

"Feeding the Beast – The Road to 5G Backhaul," *Wireless Communications Alliance (WCA)*, USA, April 2013 (Invited Panelist)

"The Mobile Patent Wars: An Introduction to the Technology behind the Ongoing Smartphone Litigation," *UC Berkeley course IEOR 190G: Wireless and Mobile Devices Patents – Patent Engineering*, USA, March 2013

"Mobile Patent Wars," *IEEE-SCV Communications Society*, USA, May 2012 (Invited Panelist)

"Building a Successful Consulting Practice," *Carnegie Mellon University (CMU) course 96-833: Fundamental Consulting Skills*, USA, May 2011

"Faster Than Fiber: Enabling Multi-Gigabit Wireless Communication Links," *IEEE International Microwave Symposium IMS 2009*, USA, June 2009

"The Future of Cellular Infrastructure," *IEEE Consultants' Network of Silicon Valley*, USA, Mar. 2009

"Wireless Backhaul Trends: The Future Role of Wireless, Fiber Optics and Copper Wire," *IEEE-SCV Communications Society*, USA, Oct. 2008

"Millimeter-Wave Sensor Systems Benchmarking for Security Applications," *IWPC Workshop on MM-Wave Sensors for Layered Security of Critical Infrastructure*, USA, April 2008

"Marketing for Translators and Interpreters," *Northern California Translators Association Workshop*, USA, Mar. 2007

"WiFiber: New Spectrum Links for Wireless Gigabit Transmission," *ACM/IEEE conference on Supercomputing SC06*, USA, Nov. 2006

"WiFiber Wireless Fiber: Ultra High Data Rate Radios," *Wireless Fibre Amsterdam*, The Netherlands, Sept. 2006 (Keynote Speaker)

"Gbps+ Wireless Local Loop: Transforming Last Mile Economics," *USTA Webinar*, Aug. 2006

"WiFiber: New Spectrum Links for Wireless Gigabit Local Broadband," *Internet 2 Spring Meeting*, USA, April 2006

"Multi-Gigabit Wireless Backhaul at 70 and 80 GHz for WiMAX Networks," *PTC '06*, USA, Jan. 2006

"Future Trends in MM-Wave Radios for Wireless Backhaul Applications," *IWPC Workshop on Millimeter Wave Backhaul and 60 GHz Unlicensed Band Radios*, USA, June 2002

"Millimeter Wave Point-To-Point Radios for Carrier Class Access and Transport Applications," *8th WCA Technical Symposium Proceedings*, USA, Feb. 2002

"Commercial Opportunities at 94 GHz," *IEEE MTT-S International Microwave Symposium*, USA, May 2001 (Invited Panelist)

"Research and Development at MAS Technology," *New Zealand Communications Research Workshop 1997*, New Zealand, May 1997 (Invited Paper)

"Overcoming RF Technical Difficulties in Moving from QPSK to 16 QAM Modulation," *New Zealand Communications Research Workshop 1997*, New Zealand, May 1997

"Modern Microwave Technology," *VHF Convention 1995*, New Zealand, April 1995

"100W 2GHz Linear FET Amplifier Design," *VHF Convention 1995*, New Zealand, April 1995

"Low Phase Noise Oscillator Design for Wide band Radio Applications," *4th New Zealand Communications Workshop*, New Zealand, Sept. 1994

"Numerical Modeling of Millimeter-Wave Schottky Diodes," *2nd UK-Japan N+N Meeting on Terahertz Technology*, Japan, July 1992

"Planar Schottky-Diode Devices for Millimetre-Wave Balanced Mixer Applications," *21st European Microwave Conference Digest*, Germany, Sept. 1991

"A Rugged 94GHz Millimetre-Wave Balanced Mixer," *1st International Conference on Millimeter Waves and Far-Infrared Technology Digest*, China, June 1989

ATTACHMENT F

David Hilliard Williams

203-423-9015; dwilliams@LBSGlobe.com; www.E911-LBS.com

Expertise

- Location-Based Services (LBS)
- GPS Systems; Network-Based Location Determination Systems
- Wireless 911 (E911); NG911
- Internet of Things (IoT); Real-Time Location Systems (RTLS)
- Non-Cellular/Indoor/Sensor-based Location Systems, including: RFID, Wi-Fi/WPS, BLE/Bluetooth, Beacon-based RTLS; NFC/DSRC; RF Fingerprint systems; Wearable systems; Hybrids/Combinations
- Expert Witness Litigation Support, Patent/Intellectual Property Development and Protection Services
- GPS/Cellphone Criminal and Civil Matter Forensics, using CDRs, RTT, PCMD, NELOS, EVDO, Geotab, Paraben, CellHawk, and Cellebrite
- Internet of Things (IoT) Ecosystem (Sensors, Identification, Verification, Authentication, Interfaces, Edge, Network, Cloud, Data Network Management, Data Management, Analytics, Network Topologies, Integration)
- Location & IoT Data Privacy and Security; Device/User ID, Verification, Authentication
- Sensor Design; Sensor System Architecture and Interface Design; Sensor Arrays
- Wireless Communications Standards, e.g. Bluetooth/BLE, Zigbee, Wi-Fi, WPAN, etc.
- Microcontroller Design, Sensor Controls Design, IoT Design/Systems Integration
- Location Data Aggregation, Anonymizing
- LIDAR/Radar Data Sourcing; Crowdsourcing
- IoT and Home Automation System Design and Integration; Control System Design, Including Remote Management, Monitoring, and Control
- Safety and Security, Home Automation, Home Energy Management Application and Architecture Design/Implementation
- Smart Card, Contactless Payment Systems
- Mobile Resource Management (MRM) Tracking and Management; Vehicle, Fleet/ELD/AOBRD, Worker/Driver, and Freight/Trailer & Asset Tracking/Mgmt.
- Telematics; Vehicle Tracking/Monitoring, Vehicle-to-Vehicle and Internal Vehicle Communications Networks and Ecosystems
- Intelligent Transportation Systems
- Connected Cars/Autonomous Vehicles (AV)
- Navigation Systems; PNDs; Geofencing; Route Optimization; Device/App Personalization
- Indoor Positioning & App Ecosystem Design
- Location-Based/Dependent Advertising, Search
- Map Data, Digital Mapping, Media/Advertising Interfacing/Management, GIS, & IoT IT
- Mobile Social/Business Networking;
- LBS and IoT Enterprise/Consumer Product & Technical Strategy, Design and Build
- Location/Context-Centric Enterprise Process Reengineering, Integration, & Interoperability
- SMART location, SMART Home, SMART Wearables, SMART Buildings, SMART Cities
- Context/Presence-Based LBS and IoT
- M2M, Smart Grid/Energy Systems
- Accident/Incident Reconstruction
- LBS Big Data and Cloud Computing

Professional Summary

David Hilliard Williams is an internationally-known expert in the wireless/mobile location and Internet of Things (IoT) fields and President and Founder of E911-LBS Consulting. He specializes in wireless and IoT-based product and technology development and implementation, as well as Intellectual Property (IP)/patent and forensics litigation services involving technologies such as Global Positioning Satellite (GPS) systems; Network-based location determination technologies such as TDOA, ECID, and AFLT; Wireless 911 (E911) and Next Generation 911; Real-Time Location Systems (RTLS) including Radio Frequency

Identification (RFID) systems, Wi-Fi-based positioning systems (WPS), BLE/Beacon-based location systems, Bluetooth, Near Field Communications (NFC), and alternative RTLS (Ultrasound, Infrared); Wearable Tags/Sensor tracking systems; Zigbee/Mesh networks; Pattern Matching; and various hybrids and combinations, as well as a broad array of IoT sensors and other systems, network, and technology enablers for management, monitoring, tracking, and control purposes, including in remote control/distributed ecosystems and associated use cases.

Mr. Williams is expert in the full range of business and consumer location-based services (LBS) and IoT applications enabled by these technologies, including safety, security, and intruder detection/monitoring, energy management, vehicle/fleet tracking/management, telematics, local search, navigation systems, presence/context-aware apps, mobile resource management, asset and freight management, wearable tags/sensors, financial/mobile wallet, mobile hospitality/POS systems, supply chain management, family tracking, mobile social and business networking, proximity-based entertainment and leisure, gaming, and intelligent transportation systems.

Mr. Williams has extensive expertise in all aspects of LBS and IoT delivery across the mobile and IoT ecosystems including enabling sensors, network communications, location determination technologies, geofencing design, map data, location data/database management, geospatial platform/Geographical Information Systems, GPS and other chipsets, data management, control system design, remote management/utilization of such control systems, and device, infrastructure and integration provider integration and management. Mr. Williams has developed and implemented industry-leading product and technology solutions for numerous LBS and IoT applications and markets and provides consulting and research services to some of the leading carriers and enterprises in the U.S., Asia, and Europe. His client list includes Apple, AT&T, Draft Kings, FedEx, GE, GM, Geotab, Green Mountain Grill, Google, Heil, the Houston Police Department, the L.A. County District Attorney's Office, Lyft, Macropoint, Nextel, NAVTEQ, Overhead Door, Peschke, Qualcomm, Samsung, Sprint, Target, Toyota, Twilio, Verizon Wireless, VIVINT, Volkswagen, and Zillow.

Mr. Williams has successfully represented both prosecutors and defendants in patent, ITC, and criminal litigation (including assisting State Public Defender entities), as well as both sides of civil trade secrets, product liability, fraud, and other litigation. He has been deposed 27 times and has testified 9 times, including successfully in The Eastern District Court of Texas (winning both infringement and invalidity matters), and in winning in ITC Court. In total he has provided expertise in matters involving over 150 patents and over 50 criminal and civil matters. His credentials in wireless/mobile/IT technologies are established to the 1980s.

Mr. Williams is expert in smart location technology issues in the Internet of Things (IoT) and connected/driverless car fields, particularly in their utilization of sensor, location and context information through the practical envisioning and design of: consumer/enterprise use matters and associated application design, sensor design and deployment strategies; process (re)engineering; IT integration; data aggregation, segmentation, analysis, and management; scalability; and security and privacy issues, requirements, collaboration structures, and ongoing management. He is expert on Big Data issues associated with location and IoT data.

With over thirty-five years in location, networking/communications, control, and information technology solutions design, selection, implementation and ongoing management, Mr. Williams has extensive experience in the activities and issues needed to get applications to market, including planning and design at the application, system, interface/integration, network, IT, operational and customer facing levels. He has been published and quoted by leading magazines and newspapers about mobile services, including The New York Times, CBS News.com, The Columbus (Ohio) Dispatch, The Boston Globe, Computerworld, Directions Mag, Mission Critical Communications, Popular Mechanics, and RFID Journal. Mr. Williams has authored five books on wireless location, including *The Definitive Guide to IoT Sensors (In Development), The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services (two versions, third in development)*, *The Definitive Guide to Wireless E911*, and (co-authored) *The Definitive Guide to Mobile Positioning and Location Management*. Mr. Williams has authored dozens of research reports, and tracks and analyzes leading companies in the LBS, IoT, and public safety industries particularly with respect to their product and technology strategies, competitive capabilities and implementation issues. He is expert on all public policy and technology issues related to emergency services/public safety, location data privacy and security, and LBS and IoT privacy protection policies, systems, and support infrastructure. He opines on location privacy issues in various forums.

Employment History

From: 2002   **E911-LBS Consulting**
To: Present
            Position: *President and Founder*
                            Provides services across the entire wireless value chain, particularly with respect to technology and business strategic planning and product design, development, implementation, and ongoing management and operations, plus specialized services such IP/Patent litigation associated with Location Based Services and applications, GPS, E911, IoT, RTLS, RFID, Wi-Fi, NFC, BLE/Bluetooth, beacons, & other location technologies and associated ecosystems. Projects include:

- Provided expert witness, technical consulting, and research analysis services with respect to location-based services-related intellectual property/patent protection, licensing, and litigation (details in separate litigation support section).

- Provide forensics expertise in examination of mobile location-related events and associated data for civil and criminal matters (both prosecutor/plaintiff and defense entities).

- Developed, implemented, managed, and marketed a portfolio of LBS applications and broader offers for leading North American wireless carrier. Responsible for all dimensions of product lifecycle and associated budgets. Work included the development and launch of several LBS applications including mobile social networking, family tracking, local search, 411 w/

location, and mobile worker, fleet, and asset management. Location technologies utilized include GPS, Wi-Fi positioning, RFID, Bluetooth, Cell ID (CID), ECID, and TDOA. Worked extensively with network engineering to troubleshoot/refine new location-determination infrastructure to address/improve location accuracy, privacy and security issues.

- Conducted geofencing accuracy compliance analysis for ride-sharing company auditing their driver airport compliance record. Involved extensive use of JSON/GeoJSON records.

- Conducted comprehensive technical and intellectual property analysis of Real-Time Location Systems (e.g. RFID, Wi-Fi Positioning, Bluetooth, Infrared/Ultrasound, Others) market for European client looking to assert location-related patents.

- Provided technical guidance for mobile payments/wallet startup utilizing RFID, NFC and other technologies as key location enablers. Identified key issues and redeveloped successful patent application after initial USPTO rejection.

- Conducted technical and intellectual property analysis for Fleet Management/Telematics operator and service provider assessing potential infringement candidates.

- Conducted analysis of location aggregation market for client interested in acquisition in that industry space.

- Provided E911 consulting expertise in support of new spectrum regulatory approval and technical implementation issues for nationwide carrier.

- Managed the design, collection, and analysis of E911 infrastructure deployment of western region of major wireless carrier. Data collected focused on technical issues associated with TDOA (Time Difference of Arrival) technology implementation, and collection and reporting of location accuracy data for FCC reporting purposes.

- Developed the site map and primary content for the NAVTEQ (now HERE) Network for Developers (N4D) LBS web ecosystem – http://developer.navteq.com. Responsible for designing and managing the site map and overall content, identifying key contributors and materials, and utilizing a variety of fragmented information to develop broad and deep technical, digital media and business content to assist various expertise levels of application developers and business

management to become intimately familiar with map data, GIS platforms, and LBS applications and underlying technologies and to provide the information and guidance to successfully develop and launch their LBS applications.

- Managed the development of the Nextel (now Sprint) Location-Based Services strategy. Efforts included market and technical analysis of likely LBS offerings and integrating those findings with Nextel's broader wireless voice and data strategies. Work included prioritizing applications based on focus group findings, business matter attractiveness, ease of implementation, impact on network infrastructure, and synchronization and integration with GPS terminal and E911 mandate rollout plans. Managed network engineering and consulting team to design network modifications to best support the additional demands of LBS applications and underlying bandwidth-consuming digital media content. Product strategy including researching and incorporating context-aware/presence concepts into product/device and network engineering plans.

- Developed navigation platform strategy for major international auto manufacturer. Assessed direction and technology requirements of in-car and portable navigation device (PND) technologies; developed strategy for in-car navigation platform.

- Developed numerous LBS company research reports using proprietary multi-point "report card" addressing numerous business and technology strategy dimensions and issues.

- Authored multiple books on wireless location, including *The Definitive Guide to IoT Sensors (In Development), The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services (2005/2009 versions)*, *The Definitive Guide to Wireless E911*, and (co-authored) *The Definitive Guide to Mobile Positioning and Location Management*.

- Advised numerous small companies and startups such as i360Hygiene, LOCAID, Finder Technologies, Orion GPS, and XYVerify on LBS-related issues to enhance value propositions on business, product and technology dimensions to enhance attractiveness to potential investors/acquisition candidates.

From: 2009   **AT&T Mobility**
To: 2010
        Position: *Senior Product Manager – Enterprise LBS*
        Led the development, implementation, and marketing of numerous enterprise location-based services across all sales, marketing and

operational channels. Work included responsibility for all dimensions of product lifecycle and associated budgets. Products managed included telematics, fleet/vehicle management, asset/freight management, and mobile resource management GPS/LBS apps on a variety of platforms such as Telenav. Played key role in design of company-wide location services product and implementation roadmap.

From: 2007   **AT&T Mobility**
To: 2009

Position: *Consumer LBS Product Realization Manager (Consultant)*
Responsible for the design, development, implementation, and ongoing lifecycle management of several high-profile Consumer LBS applications and associated operational support. Overall application design and implementation responsibilities included AT&T FamilyMap, Loopt Mobile Social Networking, 411 with location, Slifter Local Search, and CaddyHawk Game systems. Work included design, troubleshooting, and implementation of AT&T location-related network, application, digital media and content, and privacy infrastructure and associated issues such as accuracy and privacy (efforts resulted in patent co-invention).

From: 1993   **Accenture**
To: 2002

Position: *Associate Partner - Communications & High-Technology Strategy; Information & Technology Strategy practices*
Responsible for development of wireless location practice. Led development of business, technology, and product strategies for numerous communications and technology-centric companies looking to enter new markets. Specialized in new product design, development, and implementation, as well as network infrastructure design need to support next generation, high bandwidth-consuming digital media content and associated infrastructure. Efforts included assisting AT&T (re)enter local service, (then) Bell Atlantic launch long distance services, (then) GTE implement Intelligent Network services, Omnipoint (later part of T-Mobile) network integration strategy, as well as leading the design and implementation of voice and data communications networks and associated data management capabilities in a variety of industries including hospitality/retail, energy, agriculture, and banking/financial services.

From: 1991   **Booz Allen & Hamilton**
To: 1993

Position: *Senior Associate – Information Technology Practice*
Provided and led consulting services for communications industry and other Information Technology-intensive companies in developing technology strategies for addressing new marketing opportunities and internal operational issues.

From:	1987	**Deloitte Consulting (Originally Touche Ross)**
To:	1991	
	Position:	*Senior Manager*
		Provided consulting services for technology-intensive companies in developing business and product strategies for addressing new marketing opportunities and internal operational issues.

From:	1983	**Hughes Aircraft Company**
To:	1985	
	Position:	*Electrical Engineer – Radar Development*
		Microcomputer and digital system design engineer on the F-15 fighter radar system as part of analog to digital platform conversion and associated tracking and control systems design. System involved interfacing to/with wide array of on-board, ground control, and other in-flight communications/control sensors/sensor arrays and systems.

Litigation Support Experience

Date:	2021-2022	**Greenberg Trauig**
	Matter:	HP Enterprises, Aruba
	Project:	Providing expert consulting, report, and testimony in support of non-infringement and invalidity analysis in EDTX matter involving beacons/beaconing technologies, methods, and associated systems. Depositions (2); Settled.

Date:	2021-2022	**Keker, Van Nest & Peters LLP**
	Matter:	Google, Ecobee, and VIVINT (v. Ecofactor) (WDTX)
	Project:	Provided/ing expert consulting, report, and testimony in support of invalidity analysis involving HVAC remote monitoring and control and associated sensors, systems, and communications capabilities. Deposition and Testimony; Ecobee and VIVINT trials pending.

Date:	2021-2022	**Baker Botts**
	Matter:	Lyft (multiple matters)
	Project:	Providing expert consulting, support, and report for matters involving location-related applications technologies including GPS, Bluetooth, Wi-Fi positioning, RFID, and road sensors/readers.

Date:	2022	**Wolf, Greenfield & Sacks, P.C.**
	Matter:	Snap
	Project:	Providing expert consulting, support, and report for IPR matter involving social-based location, mapping, matching, and display technologies. Petition pending.

Date:	2022	**Winston & Strawn LLP**
	Matter:	ZIM Integrated Shipping
	Project:	Provided expert consulting in EDTX invalidity and non-

infringement case involving method and apparatus for shipping information patents. Case voluntarily dismissed.

Date: 2020-2021 **Lowe Graham Jones**
Matter: Green Mountain Grill (IoT Connected Grill) (ITC Court)
Project: Provided expert consulting, report, and testimony in ITC case involving Internet of Things (IoT), remote monitoring and control, cloud services, and various short-range communications technologies. Involves non-infringement, DI, Invalidity, and Inventorship. Deposition and Testimony; Mixed Decisions.

Date: 2021 **Munger, Tolles & Olson LLP**
Matter: Google
Project: Provided expert consulting and support for EDTX matter involving invalidity/non-infringement of smart cards and payment systems and associated capabilities such as Secure Elements. Settled.

Date: 2021 **Jackson Walker L.L.P.**
Matter: Prova
Project: Provide expert consulting, support, and report for IPR involving buyer verification/tracking and inventory management/tracking utilizing RFID technology.

Date: 2020-2021 **Latham & Watkins LLP**
Matter: Overhead Door (OHD-Garage Door Manufacturer) (ITC Court)
Project: Provided expert consulting, report, and testimony in ITC case involving Internet of Things (IoT), remote monitoring and control, and various short-range communications technologies. Deposition and Testimony in ITC court. Won.

Date: 2020-2021 **Ropes & Gray LLP**
Matter: Target
Project: Providing expert consulting, support, and report for IPRs for several patents involving short-range communications technologies and associated identification and location determination methods and techniques including Bluetooth, RFID, and Wi-Fi. Depositions (7); Won on vast majority of elements.

Date: 2020-2022 **Baker Botts**
Matter: Draft Kings
Project: Providing expert consulting, support, and report for IPRs for several patents involving validating gaming customers location in appropriate online gaming jurisdictions/geofencing. Depositions (2); Won. One matter in progress.

Date: 2020 **Baker Botts**
Matter: Lyft

Project:		Provided expert consulting, support, and report for IPRs involving Intelligent Transportation systems, geofences, and location technologies including GPS, Bluetooth, Wi-Fi positioning, RFID, and road sensors/readers. Deposition, Won.

Date:	2020	**Finnegan & Henderson**
	Matter:	Google (2)
	Project:	Providing expert consulting, support, and report for IPRs involving user experience sharing, software registration, and device/user tracking involving a variety of location technologies. Won/In progress.

Date:	2019-2021	**Lynch Thompson LLP**
	Matter:	Heil
	Project:	Providing technical/engineering expertise in trade secrets matter involving Internet of Things, RFID, Telematics, Vehicle Sensors, & Big Data for waste vehicle manufacturer. Deposition; In progress.

Date:	2018-2020	**Lawgivers (Trinidad and Tobago)**
	Matter:	A&V Oil and Gas
	Project:	Provided expert support, report, and testimony in arbitration matter involving government of T&T. Focused on (in)accuracies of GPS-based vehicle tracking system relative to a variety of key events. Won; potential $1 billion in damages involved (settlement reached).

Date:	2019-2020	**Perkins Coie**
	Matter:	Zillow
	Project:	Provided expert support, report, and deposition for non-Infringement matter for major real estate services firm and associated subsidiaries involving a wide array of location determination technologies on smartphones. Won.

Date:	2019-2020	**Baker Botts**
	Matter:	Lyft
	Project:	Provided expert support, report, and deposition is support of Claim Construction brief associated with non-infringement matter. Won.

Date:	2016-2021	**Sterne Kessler Goldstein Fox**
	Matters:	Google (Multiple matters); Google (Nest, Multiple matters)
	Projects:	Providing expert support, reports, and deposition for several IPRs of location/context-related patents on behalf of leading Internet services company utilizing a wide variety of communications and location technologies. 2 matters won; others ongoing.

Date:	2013, 2019/2020	**XYVerify (3)**
		Patent Re-Submission and Approval; Patent Application Creation
	Projects:	(Re)wrote patent applications for LBS/financial verification system

using multiple location determination methods including RFID, Bluetooth, WPS, and GPS. Efforts enabled patents to be approved after initial rejection by USPTO.

Date: 2013-2022 **Civil and Criminal Forensics**
Matters: Various
Project: Provided/Providing cellphone, vehicle, specialty device, and computer-based location forensics expertise in over 40 criminal and civil matters involving numerous location determination technologies and associated applications and systems. Criminal matters include homicide, attempted murder, assault (multiple types), arson (building and field), armed robbery, breaking and entering, and property crime. Civil matters include trade secrets, product liability, accident liability, fraud, and employment matters.

Applications/Platforms for criminal and civil forensics analysis include cellular records, 911 records, Facebook/Instagram/ Messenger/social media apps, Google/search, Google tracking apps (e.g. Timeline, others), vehicle tracking systems, specialty GPS (e.g. GPS ankle bracelets, special devices) surveillance and safety systems, smart home systems, aviation, vehicle infotainment systems, and connected cars, Expert/knowledgeable in numerous forensic technologies, tools, and accident/incident reconstruction methods including CDR, NELOS, PCMD, RTT, EVDO, Cellebrite, Paraben, Google Earth/Timeline, and Hawk Analytics/CellHawk, as well as specialized knowledge on iOS and Android smartphone location determination techniques and data collection, analysis, and management of all types including KML/KMZ, (Geo)JSON, CSV, (E)WKT/WKB, Shapefile, ESRI, and other GIS vector/raster systems, technologies, formats, and models.

Date: 2019 **Sterne Kessler Goldstein Fox**
Matter: Volkswagen
Project: Provided expert support for IPR involving Location-Based Messaging in automotive related use matter/environments.

Date: 2017-2018 **Finnegan & Henderson**
Matter: Fed Ex
Project: Provided expert support, consulting, reports, deposition, and trial testifying for infringement and district court invalidity proceedings on behalf of leading transportation/shipping company. Matter won (in The Eastern District Court of Texas) on both infringement and invalidity counts on behalf of defendant Fed Ex.

Date: 2017-2018 **Polsinelli**
Matter: Uber
Project: Provided expert support and reports for Trade Secrets matter

involving major shared transportation provider.

Date:	2017-2018	**Renner Otto**
	Matters:	Macropoint; Timekeeping Systems Inc.
	Projects:	Providing consulting, expert services, report and deposition in district court patent invalidity matters for transportation and employee tracking providers. Won.

Date:	2016-2018	**Paul Hastings**
	Matters:	Samsung (2 matters)
	Project:	Provided expert services for Inter Partes Review (IPR) of multiple location, safety, and security patents on behalf of major telecommunications equipment and services provider.

Date:	2016-2017	**European Firm**
	Matter:	Patent Infringement/Claim Chart Analysis
	Project:	Provided consulting, market analysis, and claim chart development for patent holder involving RTLS-related repeater technologies, particularly using WPAN/Zigbee networks.

Date:	2016-2017	**Baker Botts**
	Matter:	Twilio
	Project:	Provided location/E911-related expert services, report, and deposition for IPR of mobile registration patent on behalf of Voice & Video, Messaging, and Authentication APIs provider.

Date:	2016	**Los Angeles District Attorney's Office**
	Matter:	People v. Dawud Abdulwali
	Project:	Provided expert services on location technologies used to identify and trace accused arsonist on behalf of L.A. District Attorney's (Prosecutors) office. Defendant pled guilty.

Date:	2016-2017	**Fitzpatrick, Cella, Harper & Scinto**
	Matter:	Geotab
	Project:	Providing expert support, reports, and deposition for infringement defense of multiple asserted patents on behalf of fleet management/telematics provider in EDTX. Settled.

Date:	2015-2016	**The Ogg Law Firm PLLC**
	Matter:	City of Houston Police Department
	Project:	Provided expert services/testimony regarding veracity of Automatic Vehicle Locator (AVL) systems in officer suspension matter.

Date:	2015-2016	**Sterne Kessler Goldstein Fox**
	Matter:	VIVINT
	Project:	Providing expert support, reports, and deposition for IPR involving several location-related patents for home security/energy company.

Date: 2015   **Hogan Lovells**
Matter: Apple
Project: Provided expert support for multiple location-related patent Inter Partes Review (IPR) and infringement proceedings for leading mobile platform, application and services provider.

Date: 2015   **Thompson Hine LLP**
Matters: Macropoint
Project: Provided expert support for patent litigation efforts involving fleet management devices, software, and services. Won.

Date: 2013-2014   **Williams & Connolly**
Matter: State of Maryland
Project: Provided expert services in assessing validity of GPS tracking bracelet/system in parole violation matter. Matter won.

Date: 2013-2014   **Cravath, Swaine & Moore**
Matter: Qualcomm
Project: Provided expert litigation support, technical consulting, and advisory services in Anti-Trust matter regarding location services technologies, platforms, and standards.

Date: 2014   **Patterson Thuente Pedersen, P.A.**
Matter: Kaspersky Internet Security
Project: Provided expert litigation support and technical consulting in patent countersuit involving internet security services.

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Date: 2014   **Sullivan & Cromwell LLP, others**
Matter: Peschke
Project: Provided expert support and technical consulting in location services infringement patent dispute involving interactive mapping applications. Effort included providing deposition testimony.

Date: 2012-2013   **Covington & Burling**
Matter: Samsung (ITC Court)
Project: Provided expert litigation support and technical consulting and advisory services in International Trade Commission matter. Won.

Date: 2011-2013   **Connolly Bove Lodge & Hutz**
Matter: Enovsys
Project: Provided expert litigation support and technical consulting and advisory services for pursuit of LBS patent royalties and infringement settlements.

Date: 2011-2013   **Voxson**
Matters: Various
Project: Provided expert litigation support and technical consulting and

advisory services for pursuit of E911 and LBS patent infringement royalties and settlements.

Date:	2010-2012	**Morrison & Foerster LLP**
	Matter:	Cellco Partnership (dba Verizon Wireless)
	Project:	Provided expert advisory and report services in support of IPR re-examination process of E911 and LBS patents.

Date:	2011-2012	**Dovel & Luner**
	Matter:	TrackBeam
	Project:	Provided market/technical consulting, expertise and research analysis of LBS patents to identify potential licensing candidates.

Date:	2011	**SNR Denton**
	Matter:	Wavemarket
	Project:	Provided market and technical consulting and advisory services for defense of LBS patent lawsuits.

Date:	2010	**State of New Jersey**
	Project:	Provided wireless location consulting expertise in development of economic growth strategy for State of New Jersey.

Date:	2007-2008	**General Electric**
	Project:	Provided consulting research and guidance on LBS and E911 technology, GE-owned patents, prior artwork, technology direction.

Education

Year	College/University	Degree
1987	The University of Texas at Austin (1st in graduating class)	MBA, Information Systems Management
1983	Purdue University, West Lafayette, Indiana (Top honors; Tau Beta Pi, Eta Kappa Nu)	BSEE, Digital System Design emphasis

Patents

- "Method and apparatus for providing mobile social networking privacy." (U.S. Patent Number 8,613,109, issued on December 17, 2013).
- "Systems and methods of using wireless location, context, and/or one or more communication networks for monitoring for, preempting, and/or mitigating pre-identified behavior." (U.S. Patent Number 10,477,342, Issued November 12, 2019).
- "Systems and methods for monitoring for and preempting pre-identified restriction violation-related behavior(s) of persons under restriction" (U.S. Patent Number 10,497,242, Issued December 3, 2019).
- "Systems and methods for providing location-based security and/or privacy for restricting user access" (U.S. Patent Number 10,555,112, Issued February 4, 2020).

- "Systems and methods for developing, monitoring, and enforcing agreements, understandings, and/or contracts" (U.S. Patent Number 10,853,897, Issued 12/1/2020).
- "Systems and methods for monitoring for and preempting pre-identified restriction violation-related behavior(s) of persons under restriction" (U.S. Patent Number 10,861,307, Issued December 8, 2020).

Publications

Books:
1. The Definitive Guide to IoT Sensors (In development)
2. The Practical Guide to The Internet of Things (IoT): Use Matters and Enabling Technologies (In development)
3. The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services (2 versions, plus version in development)
4. The Definitive Guide to Wireless E911
5. The Definitive Guide to Mobile Positioning and Location Management (Co-authored)

Articles/Quotations:
1. Location Data Privacy posts/blog. Ongoing at www.E911-LBS.com.
2. Linked In. March 3, 2020. "Facial Recognition: Good, Bad, or Ugly?"
3. The Columbus Dispatch. February 17, 2017. "Experts: GPS monitors couldn't save OSU student's life"
4. E911-LBS.com. May 2012. "The Pacifier Generation – How Wireless is Impacting Our Society"
5. Nbizmag.com. Summer 2008. "How Will the Convergence of LBS Technologies Affect Business?"
6. Directions Magazine. November 30, 2005. "The Deadline for the E911 Mandate Approaches…Where Do Things Stand?"
7. Computerworld. May 23, 2005. "Beyond The Supply Chain: The Impact of RFID on Business Operations and IT Infrastructure"
8. RFID Journal. June 12, 2005. "IT's Impact on RFID"
9. Directions Magazine. July 29, 2004. "The Strategic Implications of the Wal-Mart RFID Mandate"
10. Directions Magazine. February 25, 2004. "RFID-Hot Technology with Wide-Ranging Applications"
11. WirelessDevNet.com. 1/30/2003. "It's The (Location-Based) Applications – Stupid!"

Languages/Tools
- C/C++, Java, Basic, Cobol, Fortran, Pascal, APL, Assembly, Others
- CDR, NELOS, PCMD, RTT, EVDO, Cellebrite, Paraben, Google Earth/Timeline, Hawk Analytics/CellHawk, as well as specialized knowledge on iOS and Android smartphone location determination techniques.
- Data collection, analysis, and management of all types including KML/KMZ, (Geo)JSON, CSV, (E)WKT/WKB, Binary, Shapefile, ESRI, and other GIS vector/raster systems, technologies, formats, and models.

Associations and Achievements
- NENA, APCO. Certified in Emergency Management Response (CERT)

ATTACHMENT G

Walter Overby

11 SW 51st St
Des Moines, IA 50312

Mobile: (678) 596-4332
Email: woverby@devonwoodlogistics.com

Experience

Devonwood Logistics – Des Moines, IA. Litigation support as a technical consultant in software design and development.

Key Experience. Supported counsel on more than 125 patent, copyright and trade secret cases since 2004. Testified as a technical expert in several cases. Shipped almost a dozen products over ten years as a commercial software developer. Extensive knowledge of software and the computer industry.

Key Skills. Excellent software-related technical skills. Strong communication, analytical, and argumentation skills. Ability to quickly learn both legal and technical concepts, including the ability to understand technical documentation and source code in areas where I have no prior experience. Prior art research. Expert witness testimony.

Velant, Inc. – Atlanta, GA. Provided key technology leadership for a logistics software start-up backed by top venture firm Matrix Partners.

Vice President, Software Development – 2001-2003. Responsible for all technology development decisions and processes across 25-member software team.

Director, Software Development – 2000-2001. Directed and participated significantly in coding of initial Velant system from scratch, based on the Microsoft platform and tools.

Peoplesoft/Vantive – Boston, MA. From 1998 until 2000, managed web migration for the worldwide leader in CRM applications before and after Vantive was acquired by Peoplesoft.

Wayfarer/Torso – Washington, DC. Key engineer in 1997 and 1998 for a leader in corporate Webcasting solutions funded by Sequoia Capital and Hummer/Winblad Venture Partners.

Group Logic – Arlington, VA. Designed, coded, and shipped seven commercial products from 1993 to 1997: Adobe Systems' Virtual Network, Northern Telecom's VISIT Messenger and VISIT ScreenShare, Novadigm's Enterprise Desktop Manager, Group Logic's MassTransit and Imagexpo, and FreeLoader Inc.'s FreeLoader.

Skills

Technologies

Programming. C++ including STL, C#, Visual Basic.NET, Visual Basic 6, SQL, Java, C, Python, Pascal, JavaScript, VBScript, Unix shell scripting, Verilog LSI design language, Graphviz, VHDL, MUMPS, DSP Assembly, NewtonScript, Objective-C, PowerShell, Swift, MATLAB, SDL, Clojure, Go, Ruby, Scheme, Lua

Web Server. Microsoft Internet Information Server, Apache httpd, PHP, Microsoft Active Server Pages, Java Server Pages and Servlets with Apache Tomcat, Apache Struts and Tiles, Spring Framework, CGI, Ruby on Rails

Web Client. HTML, XHTML, CSS, Dynamic HTML, JavaScript, JSON, Java applets including LiveConnect, Microsoft Internet Explorer, Netscape Navigator, Mozilla, Firefox, Apple Safari, Google Chrome

XML. XML including Namespaces, XSL and XSLT, XPath, SOAP

Database. Microsoft SQL Server, MySQL, Microsoft Access, ADO, DTS, ODBC, ADO.NET, JDBC, SQLite

Operating Systems. Microsoft Windows including Windows 7; Mac OS X; iOS; Linux including Ubuntu, Knoppix, Red Hat and LinuxPPC; VxWorks; eCos; Google Android

Microsoft Technologies. .NET Framework, COM+ Component Services, Message Queuing, MFC and ATL C++ frameworks, Index Server

Networking. HTTP, TCP/IP, Wireless Networking, Virtual Private Networking with PPTP, Newsgroups with NNTP, Winsock, IMAP, SMTP, POP, DNS, DHCP, DECnet, AppleTalk, H.323 Conferencing Protocols, SS7, SIP, SSL, GSM, UMTS, Cisco VPN, LTE

Tools

Development. Microsoft Visual Studio 6 and .NET, Metrowerks CodeWarrior, Apple Xcode. Git, Microsoft SourceSafe, Rational ClearCase, Subversion, Doxygen, CVS, Perforce. Compuware DevPartner Studio, Embarcadero ER/WIN, Tall Tree DocJet, JUnit and NUnit testing frameworks, BBEdit, Eclipse, wxPython, SlickEdit, UltraEdit, ExamDiff Pro, CodeSuite, CLOC

Productivity. Microsoft Office, Project, and Visio, Adobe Acrobat and Photoshop, OpenOffice.org, Pages, Numbers, Keynote

Education

Duke University – Durham, NC. B.S. in Computer Science, cum laude. May 1993.
Angier B. Duke Scholar. Highest merit award; full tuition for four years.
Rothermere Scholar. Award to study law at New College, Oxford. Summer 1992.

Walter Overby – Consulting History
Legal

- Consultant to Chamberlain in Chamberlain v. Overhead Door, *Certain Movable Barrier Operator Systems and Components Thereof, U.S. ITC Inv. No. 337-TA-1209 (Enforcement Proceeding)*

- Consultant to Zeiss in *Carl Zeiss X-Ray Microscopy Inc. v. Sigray Inc.*, No. 21-cv-01129-EJD (N.D. Cal.)

- Consultant to Truist Bank in *United Services Automobile Association v. Truist Bank*, Civil Action No. 2:22-cv-291, E.D. Tex. (Marshall) – September 2022 and ongoing.

- Consultant to CommScope in TQ Delta, LLC v. CommScope Holding Co., Inc., No. 2:21-cv-310 (E.D. Tex.) – June 2022 and ongoing.

- Consultant to Nokia in *TQ Delta, LLC v. Nokia Corp., Nokia Solutions and Networks Oy, and Nokia of America Corp.*, Case No. 2:21-cv-309-JRG (E.D. Tex.) – June 2022 and ongoing.

- Consultant to ON24 in *ON24, Inc. v. webinar.net, Inc., N.D. Cal. (S.F.), Case 3:21-cv-07721* – April 2022 and ongoing.

- Consultant to Apple in *Ericsson Inc. et al v. Apple Inc., Civ. No. 6:22-cv-00061-ADA (W.D. Tex.)* – April 2022 and ongoing.

- Consultant to Apple *In the Matter of Certain Mobile Phones, Tablet Computers, Smart Watches, Smart Speakers, and Digital Media Players, and Products Containing Same, Inv. No. 337-TA-3596 (U.S.I.T.C.)* – April 2022 and ongoing.

- Consultant to Apple *In the Matter of Certain Mobile Phones and Table Computers, All With Switchable Connectivity, and Products Containing Same, Inv. No. 337-TA-3597 (U.S.I.T.C.)* – April 2022 and ongoing.

- Consultant to ZTE in *WSOU Investments LLC v. ZTE Corporation et al., Nos. 6:20-cv-00487-497-ADA1 (W.D. Tex.)* – January 2022 and ongoing.

- Consultant to Comcast in *TQ Delta, LLC v. Comcast Corporation and Comcast Cable Communications, LLC, D. Del., Civil Action No. 15-cv-611-RGA* – September 2021 and ongoing.

- Consultant to Cox in *TQ Delta, LLC v. CoxCom, LLC, Cox Media, LLC, Cox Communications, Inc., and Cox Enterprises, Inc., D. Del., Case 1:15-cv-00612-RGA* – September 2021 and ongoing.

- Consultant to Time Warner Cable in *TQ Delta, LLC, v. Time Warner Cable Inc. and Time Warner Cable Enterprises LLC, D. Del, Case 1:15-cv-00615-RGA* – September 2021 and ongoing.

- Consultant to Verizon in *TQ Delta, LLC v. Verizon Services Corp., Verizon Online LLC, Verizon Business Network Services Inc., Verizon Delaware LLC, and Verizon Information Technologies LLC, D. Del., Civil Action No. 15-cv-616-RGA* – September 2021 and ongoing.

- Consultant to DISH in TQ Delta, LLC v. DISH Network Corporation, et al., C.A. No. 15-614 (RGA) – September 2021 and ongoing.

- Consultant to NEC in an investigation involving adaptive bitrate streaming technology. – September 2021 and ongoing.

- Consultant to Bumble in *Ikorongo Tech. LLC v. Bumble Trading LLC, C.A. No. 20-256-ADA (W.D. Tex.)* – July 2021 and ongoing.

- Consultant to Lyft in *Ikorongo Technology LLC, et al. v. Lyft, Inc.; W.D. Tex (Waco); Case No. 6:20-cv-00258-ADA* – June 2021 and ongoing.

- Consultant to IBM in *Chewy, Inc. v. International Business Machines Corporation*; S.D.N.Y.; Case No. 1:21-cv-01319-JSR – May 2021 and ongoing.

- Consultant to Rothschild in *Rothschild Connected Devices Innovations, LLC. v. The Coca-Cola Company*, Case No. 16-cv-01242-TWT (N.D. Ga.) – May 2021 and ongoing.

- Consultant to Microsoft in *D3D Technologies, Inc. v. Microsoft Corporation*, M.D. Fla., Case No. 6:20-cv-1699 – April 2021 and ongoing.

- Consultant to Avaya in *Solaborate Inc. et al v. Avaya Inc*, Superior Court of the State of California, County of San Bernardino, San Bernardino Division, CIV DS 2001113 – April 2021 and ongoing.

- Consultant to Microsoft in *WSOU Investments, LLC d/b/a Brazos Licensing and Development v. Microsoft Corporation*, Civil Action Nos. 6:20-cv-00455-ADA, 6:20-cv-00457-ADA – April 2021 and ongoing.

- Consultant to Buyer's Best Bet and Lenny Estrin in SwissWatchExpo, Inc. v. Buyer's Best Bet, Inc. et al., I:20-CV-03930-SCJ (N.D. Ga. filed Sept. 22, 2020) – April 2021 and ongoing.

- Consultant to Cisco in *Monarch Networking Solutions LLC v. Cisco Systems, Inc., Meraki LLC, and Duo Security, Inc.*; W.D. Tex (Waco); Case 6:20-cv-00381-ADA – March 2021 and ongoing.

- Consultant to Hewlett Packard Enterprise Company and Aruba Networks in *Q3 Networking LLC v. Hewlett Packard Enterprise Company and Aruba Networks, LLC;* ITC Inv. No. 337-TA-1227 & D. Del. Case No. 1-20-cv-01265 – January 2021 and ongoing.

- Consultant to CommScope Holding Company, CommScope, Ruckus Wireless, and ARRIS US Holdings in *Q3 Networking LLC v. CommScope Holding Company, Inc., CommScope, Inc., Ruckus Wireless, Inc., and ARRIS US Holdings, Inc.;* ITC Inv. No. 337-TA-1227 & D. Del. Case No. 1-20-cv-01263 – January 2021 and ongoing.

- Consultant to NETGEAR in *Q3 Networking LLC v. NETGEAR, Inc.*; ITC Inv. No. 337-TA-1227 & D. Del. Case No. 1-20-cv-01264 – January 2021 and ongoing.

- Consultant to Apple in a confidential ICC arbitration involving image signal processing technology – December 2020 and ongoing.

- Consultant to Apple in Joseph Wiesel v. Apple Inc., (EDNY) Civil Action No. 1:19-cv-7261 – December 2020 and ongoing.

- Consultant to Cisco in Monarch Networking Solutions LLC v. Cisco Systems, Inc., E.D. Tex, (Marshall), Civil Action No. 2:20-cv-00015-JRG - November 2020 and ongoing.

- Consultant to PNC in *United Services Automobile Association. v. PNC Bank N.A.*; E.D. Tex. Marshall, Case 2:20-cv-00319-JRG – November 2020 and ongoing.

- Consultant to Apple in *Neonode Smartphone LLC v. Apple Inc.*, Civil Action No. 6:20-cv-505; W.D. Tex. (Waco) - September 2020 and ongoing.

- Consultant to IBM in *International Business Machines Corporation v. Zillow Group, Inc. et al.* Civil Action No. 2-20-00851-TSZ (W.D. Wa.) – July 2020 and ongoing.

- Consultant to Uniden in *Escort Inc. v. Uniden America Corporation; N.D. Tex. (Dallas); Civil Action No. 3:18-cv-161-N HRL* – January 2020 and ongoing.

- Consultant to SonicWall in *Finjan, Inc. v. SonicWall, Inc., N.D. Cal, Case 5:17-cv-04467-HRL* – November 2019 and ongoing.

- Consultant to Cisco in *Centripetal Networks, Inc. vs. Cisco Systems, Inc.; E.D. Va (Norfolk)*; Case No. 2:18-CV-00094-MSD-LRL – September 2019 - April 2020.

- Consultant to Adobe in *Realtime Adaptive Streaming v. Adobe Systems Inc.; C.D. Cal.; Case No. 2:18-cv-09344* – September 2019 – April 2020.

- Consultant to POWERbahn in *POWERbahn LLC v. Foundation Fitness LLC, Wahoo Fitness LLC, and Patrick Warner; N.D. Ga. (Atlanta); Civil Action No. 1:17-cv-02965-AT* and *POWERbahn LLC v. Foundation Fitness LLC, Wahoo Fitness LLC, Wahoo Fitness Holdings LLC, and Patrick Warner*; N.D. Ga. (Atlanta); Case 1:19-cv-01678-AT – July 2019 and ongoing.

- Consultant to Apple in *Seven Networks, LLC v. Apple; E. D. Tex Marshall; Civil Action No. 2:19-cv-115* – June 2019 - July 2020.

- Consultant to Microsoft in Uniloc 2017 LLC v. Microsoft Corp.; C.D. Cal., Case No. 8:18-cv-2053 (Consolidated Case) – May 2019 and ongoing.

- Consultant to Apple in *Certain Data Transmission Devices, Components Thereof, Associated Software, and Products Containing the Same; ITC No. 337-TA-1150* and *Data Scape Limited v. Apple Inc.; C.D. Cal. West; Case No. 2:18-cv-10659* – May 2019 and ongoing.

- Consultant to Cisco in *Uniloc 2017, LLC v. Cisco Systems, Inc.; E.D. Tex. (Marshall); Case No. 2:18-cv-00505-JRG* – 2019.

- Consultant to Cisco in *Bushnell Hawthorne, LLC v. Cisco Systems, Inc.; E.D. Va. Case 1:18-cv-00760-TSE-MSN* – November 2018 and ongoing.

- Consultant to ASML in a patent infringement matter involving Nikon, *In the Matter of Certain Semiconductor Lithography Systems and Components Thereof; ITC Inv. No. 337-TA-3341* – November 2018 through March 2019.

Legal - Continued

- Consultant to Zeiss in a patent infringement matter involving Nikon, *In the matter of Certain Lithography Machines and Systems, and Components Thereof; ITC Inv. Nos. 337-TA-1128 and 1129* – October 2018 through March 2019.

- Consultant to MModal in *Nuance Communications, Inc. v. MModal LLC, MModal IP LLC, LP Parent, Inc., and Legend Parent, Inc.; Case No. 1:17-Cv-01484-UNA (D. Del)* – October 2018 and ongoing.

- Consultant to Dish Network in *Realtime Adaptive Streaming LLC v. Sling TV LLC, Sling Media Inc., and Sling Media LLC, Echostar Technologies LLC, Dish Network LLC, And Arris Group, Inc.; Case 1:17-cv-02097-RBJ (D. Colo.)* – October 2018 and ongoing.

- Consultant to Apple in *Qualcomm Incorporated v. Apple Incorporated, Case 3:17-cv-02402-WQH-MDD (S.D. Cal.)* – April 2018 through April 2019.

- Consultant to Apple in *Qualcomm Incorporated v. Apple Incorporated, 3:17-CV-02398-LAB-MDD (S.D. Cal.)* and *Certain Mobile Electronic Devices and Certain Mobile Electronic Devices and Radio Frequency and Processing Components Thereof (II), Inv. No. 337-TA-1093* – March 2018 through April 219.

- Consultant to Apple in *Qualcomm Incorporated v. Apple Inc., Case No. 3:17-CV-1375-DMS-MDD (S.D. Cal.)* – March 2018 through April 2019.

- Consultant to Sharp and Vizio in *Wi-LAN v. VIZIO, Case No. 1:15-cv-00788-LPS (D. Del.)* and *Wi-LAN v. Sharp Electronics Corporation, Case No. 1:15-cv-00379-LPS (D. Del.)* – February 2018 - April 2019.

- Consultant to Cisco in *TracBeam, LLC v. Cisco Systems, Inc.; E.D. Tex. (Tyler); Case 6:17-cv-00525-RWS* – February-October 2018.

- Testifying Expert for Cisco in *Finjan, Inc. v. Cisco Systems, Inc.; N. D. Cal.; Case No. 5:17-cv-00072-BLF* – January 2018 and ongoing.

- Consultant to Apple in *Qualcomm, Inc. v. Apple, Inc.; S.D. Cal; Case 3:17-cv-02403-BAS-NLS3848* – January 2018-April 2019.

- Consultant to Windrock in *Windrock, Inc. v. Advancing Machinery Solutions, LLC, John S. "Steve" Follmar, William A. Griffith, and Glenn Mincher; S. D. Tex; Case 4:17-cv-03705* – December 2017.

- Consultant to Apple in *Uniloc U.S.A. and Uniloc Luxembourg, S.A. v. Apple, Inc., Civil Action No. 2:16-cv- 470 (LEAD CASE) (E.D. Tex.)* – November 2017 and ongoing.

- Consultant to Cisco in *XpertUniverse, Inc. v. Cisco Systems, Inc.; N.D. Cal Case No. 17-Cv-3848* – October 2017 and ongoing.

- Testifying Expert for Prisua in *Prisua Engineering Corp. v. Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., and Samsung Electronics Latinoamerica Miami, Inc.; S.D. Fla.; Case 1:16-cv-21761-KMM* – September 2017-March 2018.

- Consultant to Cisco in *Vir2us, Inc. v. Cisco Systems, Inc. and SourceFire, LLC; E.D. Va., Alexandria, Case 1:16-cv-01095-AJT-IDD* – July 2017.

- Consultant to respondent Arris *In the Matter of Certain Digital Cable and Satellite Products, Set-Top Boxes, Gateways and Components Thereof; ITC Inv. No. 337-TA-1049* – Summer/Fall 2017.

- Consultant to Cisco in *Egenera, Inc. v. Cisco Systems, Inc., D. Mass. Case Number: 1:16-cv-11613-RGS* – June 2017 and ongoing.

- Consultant to respondents Funai, LG, MediaTek, MStar Semiconductor, and Sigma Designs in opposition to Broadcom *In The Matter Of Certain Semiconductor Devices And Consumer Audiovisual Products Containing The Same; ITC Inv. No. 337-TA-1047*; and in *Broadcom Corporation v. LG Electronics Inc. et al; C.D. Cal.; Case No. 8:17-cv-00404* – Summer/Fall 2017.

- Consultant to Apple in a matter before the PTAB: *Apple Inc. v. Voip-Pal.com Inc.* – May 2017.

- Consultant to Zipit in *Zipit Wireless Inc. v. Blackberry Limited and Blackberry Corporation, D.S.C., Civil Action No. 6:13-cv-02959-JMC* – March 2017.

- Consultant to Apple in *Apple Inc. v. Qualcomm Inc., Case 3:17-cv-00108-GPC-NLS (S.D. Cal.)* – March 2017-April 2019.

- Consultant to Apple in *Uniloc U.S.A. and Uniloc Luxembourg, S.A. v. Apple, Inc.,* Civil Action No. 2:16-cv-638 (E.D. Tex.) – January 2017 and ongoing.

Legal - Continued

- Consultant to Apple in *Straight Path IP Group, Inc. v. Apple, Inc.,* Case No. 3:16-cv-03582 (N.D. Cal.) – January 2017 and ongoing.

- Consultant to Chamberlain in *The Chamberlain Group, Inc. v. Techtronic Industries Co., et al.*, Northern District of Illinois, Eastern Division, Case No. 1:16-cv-6097; *The Chamberlain Group, Inc., v. Techtronic Industries Co., et al.*, USDC ND Illinois, Eastern Division Case No: 1:16-cv-6094; and *In the Matter of Certain Access Control Systems and Components Thereof*, Inv. No. 337-TA-1016 – October 2016 - December 2016.

- Testifying Expert for Huawei in *Huawei Technologies Co. Ltd. v. T-Mobile US, Inc. and T-Mobile USA, Inc.*, Nos. 2:16- cv-00052, 00055, 00056, 00057 (E. D. Tex.); *Nokia Solutions and Networks US LLC,* et al. *v. Huawei Technologies Co. Ltd.,* et al., Nos.: 2:16-cv-00753, 00754, 00755, 00756 (E. D. Tex.) – October 2016-April 2018.

- Consultant to Barco in *Barco, N.V. et al v. EIZO Corporation et al.*, N.D. Ga., Case 1:11-cv-02964-TCB – August 2016-January 2017.

- Consultant to Varentec in *Varentec, Inc. v. GridCo, Inc.*, D. Del., Case No. 1:16-cv-00217-UNA – August 2016 and ongoing.

- Consultant to CINC Systems in *T&S Property Mgmt., LLC (a/k/a "CAMS") v. CINC Systems, LLC*, Civil Action No. 1:16-CV-1005-AT (N.D. Ga.) – Summer 2016.

- Consultant to Cisco in *Uniloc USA Inc., et al. v. Cisco Systems, Inc.*, Civil Action No. 6:15-cv-1168 (Lead) – June 2016-March 2017.

- Testifying Expert for Alpinion in *Verasonics, Inc. v. Alpinion Medical Systems Co., Ltd.*, W.D. Wash., Case 2:14-cv-01820-JPD – Spring and Summer 2016.

- Consultant to LG in *Core Wireless Licensing S.a.r.l. v. LG Electronics, Inc., and LG Electronics MobileComm U.S.A., Inc.*, E.D. Tex., Marshall, consolidated cases 2:14-cv-00911-JRG-RSP and 2:14-cv-00912-JRG-RSP – October 2015-April 2016.

- Consultant to Shopkick is *Novitaz, Inc. v. Shopkick, Inc.*, Case No. 14-5077 WHO (N.D. Cal.) – August 2015.

- Consultant to Netflix in *Copy Protection LLC v. Netflix, Inc.*, C.A. No. 14-cv-365 (LPS) – Summer 2015.

- Consultant to Apple in various patent infringement actions against Ericsson Inc. and Telefonaktiebolaget LM Ericsson. These include *ITC Investigation No. 337-TA-952 regarding Certain Electronic Devices, Including Wireless Communication Devices, Computers, Tablet Computers, Digital Media Players, and Cameras*; and the counterpart *U.S. District Court Civil Action No. 2:15-CV-00293 regarding Ericsson Inc. et al. v. Apple Inc.* (E.D. Tex. Filed Feb. 26, 2015) – July – December 2015.

- Consultant to Cisco in the *Matter of Certain Network Devices, Related Software and Components Thereof (I), (II), ITC Investigation Nos. 337-TA-3045, 3046, respondent Arista Networks* – March 2015 and ongoing.

- Consultant to Amazon, Apple, Google, Huawei, and Motorola in *ContentGuard Holdings, Inc. v. Amazon.com Inc. et. al.,* E.D. Tex., Case No. 2:13-cv-01112-JRG and *ContentGuard Holdings, Inc. v. Google, Inc.,* E.D. Tex., Case No. 2:14-cv-0061-JRG-RSP – December 2014 – March 2016.

- Consultant to LG in *Straight Path IP Group, Inc. v. LG Electronics, Inc., LG Electronics U.S.A., Inc., and LG Electronics Mobilecomm U.S.A, Inc.*, Eastern District of Virginia, Case No. 1:13-cv-00933-AJT-IDD – October 2014.

- Consultant to LG in *Flatworld Interactives, LLC. v. LG Electronics, Inc., et al.*, Civil Action No. 12-964 (LPS) (D. Del.) – September 2014 – October 2015.

- Consultant to Dynamic Websites in a research project. – Fall 2014.

- Consultant to First Data in *CardSoft v. First Data Corporation, et al.*, Eastern District of Texas, Marshall Division, Case No. 2:13-cv-290 – Summer 2014 – Spring 2016.

- Consultant to LG in *Advanced Micro Devices, Inc. et al. v. LG Electronics, Inc. et al.,* California Northern District Court, Case No. 3:14-cv-01012 – July 2014 and ongoing.

- Consultant to Tyco in *Trover Group, Inc. et al v. Tyco International, Ltd. et al*, Eastern District of Texas, Marshall Division, Civil Action No. 2:13-CV-00052-JRG – Summer 2014.

- Consultant to VeriFone/Hypercom in *CardSoft v. VeriFone Systems, Inc., et al.*, Eastern District of Texas, Marshall Division, Civil Action No. 2:13-CV-941-RSP – Summer 2014 – Spring 2016.

- Consultant to Cisco in *Spherix Incorporated v. Cisco Systems, Inc.*, Civil Action No. 1:14-cv-00393-SLR, D. Del. – July 2014 – December 2015.

- Consultant to Apple in a research project. – Spring 2014 – Spring 2015.

Legal - Continued

- Consultant to Sugar Hill Records, *et al.* in *Sugar Hill Records, et al. v. CBS Interactive Inc., et al.*, C.D. Cal. Case 2:11-cv-09437-DSF-JC – Spring/Summer 2014.

- Consultant to Orbitz in *CEATS Inc. v. Orbitz Worldwide Inc.*, D. Nev Case No. 2:13-cv-01385 – Spring/Summer 2014.

- Consultant to Apple in *National Cheng Kung University v. Apple Inc.*, Eastern District of Texas, Marshall Division, Case No. 2:13-cv-00378 – December 2013 – July 2014.

- Consultant to Apple in *B.E. Technology, LLC. v. Apple Inc.*, 2:12-cv-02831 (W.D. Tenn.) – Fall 2013.

- Consultant to Apple in *Unwired Planet, LLC v. Apple, Inc.*, D. Nev. Case No. 3:12-cv-00505 – May 2013.

- Consultant to LG in *Multimedia Patent Trust v. LGE*, S.D. Cal. Case No. 12-CV-2731 H (CAB) – Spring 2013

- Consultant to Apple in various patent infringement actions against Samsung Electronics Co. and related Samsung entities, including Apple Inc. v. Samsung Electronics Co., et al., Case No. 12-cv-00630-LHK (PSG) (N.D. Cal) – February-September 2013.

- Consultant to Cisco in *TiVo Inc. v. Cisco Systems, Inc.*, Eastern District of Texas, Tyler Division, Case No. 2:11-cv-311 – Spring - Summer 2013.

- Consultant to Ingenio and YellowPages.com in *Click-To-Call Technologies Lp V. AT&T, Inc.; YP Holdings LLC, Ingenio, Inc., Yellowpages.com LLC, Ether, a Division Of Ingenio, Inc., And Ingenio, Inc., D/B/A Keen*, Western District Of Texas, Austin Division, Civil Action No. 1:12-cv-00465-SS – January 2013 and ongoing.

- Consultant to IPCom in *IPCom GmbH & Co KG v HTC Europe Co Ltd & Others*, Claim No HC 11 C02064 in the High Court of Justice, Chancery Division, Patents Court; United Kingdom – 2012-2018.

- Consultant to Cisco in preparing a production for several matters involving Cisco Systems, Inc., Cisco's customers, Telecommunications Research Laboratories d/b/a TR Labs (formerly known as Alberta Telecommunications Research Centre) and TR Technologies, Inc. – Winter 2012.

- Testifying expert for LendingTree in *LendingTree, LLC v. Zillow, et al.*, Case No. 3:10-cv-439 (W.D.N.C.) – 2012-2014.

- Consultant to Orbitz and Priceline in *Global Sessions LP v. Travelocity.com LP et al.*, Eastern District of Texas, Tyler Division, Case No. 6:10-cv-671 – August-December 2012.

- Consultant to Apple in *Motorola Mobility, Inc. v. Apple Inc.,* Consolidated Case Nos. 10-cv-23580-RNS-TEB and 12-cv-20271-RNS-TEB (S.D. Fla.) – July 2012 – February 2013.

- Consultant to NETGEAR in *NETGEAR, Inc. & Ruckus Wireless, Inc.* U.S.D.C Delaware Case. No: 10-999 (SLR) – July 2012.

- Consultant to Avaya in *Brandywine Communications Technologies, LLC vs. Avaya Inc.*, U.S.D.C. Northern District of California Case No. 4:12-cv-02035-DMR – Summer 2012.

- Consultant to Shoretel in *Brandywine Communications Technologies, LLC vs. Shoretel, Inc.*, U.S.D.C. Northern District of California Case No. 3:12-cv-02036-JSC – Summer 2012.

- Testifying expert for Apple and LG in *Multimedia Patent Trust v. Apple, et al.,* U.S.D.C. Southern District of California, Case No. 10-CV-2618 H (CAB) – Spring through Fall 2012.

- Consultant to Sprint in *Realtime Data, LLC D/B/A Ixo V. MetroPCS Texas, LLC; MetroPCS Communications, Inc.; MetroPCS Wireless, Inc.; AT&T, Inc.; AT&T Mobility LLC; Cellco Partnership D/B/A Verizon Wireless; Leap Wireless International, Inc.; Cricket Communications, Inc. A/K/A Cricket Wireless, Inc.; Sprint Nextel Corp.; T-Mobile USA, Inc.; Sprint Spectrum L.P.; Nextel Operations, Inc.; And Sprint/United Management Company*, U.S.D.C. Eastern District Texas, Tyler Division, Case No. 6:10-cv-00493-LED – Spring 2012.

- Consultant to Apple in *Apple Inc. v. Samsung Electronics Co., Ltd. et al*, United States District Court, Northern District of California Case No. 11-cv-01846 LHK; an International Trade Commission investigation, entitled *Certain Electronic Digital Media Devices and Components Thereof*, ITC Inv. No. 337-TA-796; an action in Korea, entitled *Apple Inc. v. Samsung Electronics Co., Ltd.*, Seoul Central District Court Case No. 2011 Gahap 63647; and other actions, in various jurisdictions, in which Apple and Samsung are adverse to one another – Spring 2012.

- Consultant to Apple in HTC Corp. v. Apple Inc. *In the Matter of Certain Electronic Devices with Communication Capabilities, Components Thereof, and Related Software*, ITC Inv. No. 337-TA-808 – 2012.

- Consultant to Cisco Systems in *VirnetX Inc. v. Cisco Systems, Inc., Apple Inc., Aastra USA, Inc., Aastra Technologies Ltd., NEC Corporation, and NEC Corporation of America,* U.S.D.C. Eastern District Texas Civil Action No. 6:10-cv-417 – Winter 2011.

- Testifying expert for DIRECTV in *Multimedia Patent Trust v. DIRECTV, et. al* USDC-S.D. Cal. – 09 CV 0268 MMA (NLS) – Fall 2011.

- Consultant to Avaya in *VirnetX Inc. v. Avaya Inc., Mitel Networks Corporation, Mitel Networks, Inc., Siemens Enterprise Communications GmbH & Co. KG, and Siemens Enterprise Communications, Inc.,* U.S.D.C. Eastern District Texas Civil Action No. 6:11-CV-18-LED – Fall-Winter 2011.

- Consultant to Apple in *Motorola Mobility, Inc. v. Apple, Inc.*, Case No. 10-cv- 00867 (D. Del.); *Motorola Mobility, Inc. v. Apple, Inc.*, Case No. 10-cv-23580 (S.D. Fla.); *Apple Inc. v. Motorola, Inc. and Motorola Mobility, Inc.*, Case Nos. 10-cv-00661 and 10-cv-00662 (W.D. Wis.); *In the Matter of Certain Wireless Communication Devices, Portable Music and Data Processing Devices, Computers and Components Thereof*, ITC Investigation No. 337-TA-745; *In the Matter of Certain Mobile Devices and Related Software*, ITC Investigation No. 337-TA-750 – July 2011- July 2012.

- Consultant to Siemens in *Kellstrom Integration Solutions, LLC v. Siemens PLM Software, Inc., et al.* USDC - E.D. Tex. (Tyler Division) - 6:10-cv-355 – Summer 2011.

- Consultant to Hewlett-Packard, Cisco Systems, Juniper Networks, and F5 Networks in *Implicit Networks, Inc. v. Hewlett-Packard Company*; USDC N.D. Cal - Case No. 3:10-DV-3746 SI - Spring 2011.

- Consultant to Microsoft in non-litigation research regarding their file system patent portfolio - Spring 2011.

- Consultant to LG Electronics in *the matter of Certain Mobile Telephones and Modems, Investigation No. 337-TA-758*; United States International Trade Commission - 2011.

- Consultant to Avaya, Inc. in *Microlog Corp v. Continental Airlines at al.*, U.S.D.C., E.D. Texas – Tyler Division, Civil Action No. 6:10-CV-260-LED - February 2011.

- Consultant to Apple, Inc. in *SimpleAir, Inc. v. AWS Convergence Technologies, Inc., et al.*, Case No. 2:09-cv-00289-TJW, United States District Court; Eastern District Of Texas; Marshall Division – 2011-2012.

- Consultant to Performance Technologies in *Tekelec v. Performance Technologies, Inc.*, U.S.D.C., E.D. North Carolina – Civil Action No. 09-CV-00531) – Fall-Winter 2010.

- Consultant to Apple, Inc. in *Apple v. Nokia*, Case Nos. 09–cv–791 and 1002 (D.Del.) and ITC Docket Nos. 2702 and 2707, *Apple v. HTC, et al*, Case Nos. 1:10–cv–00166 and 167 (D. Del.) and *Apple v. HTC, et al. and Nokia et al.*, ITC Docket No. 2715 – 2010-2011.

- Consultant to 1-800-Flowers.com, Inc., et. al. in *SFA Systems, Inc, v. 1-800-Flowers.com, Inc., et. al.*; Civil Action No. 6:09-CV-00340-LED; United States District Court; Eastern District Of Texas; Tyler Division – Summer 2010.

- Consultant to LG Electronics in *Vizio, Inc., v. LG Electronics, Inc., and LG Electronics U.S.A., Inc.*, 1:09-CV-1481 (BEL) - Winter 2010.

- Testifying expert for Cerner Corporation in *Mayo Clinic, Mayo Foundation for Medical Education & Research, and Cerner Corporation v. Dr. Peter L. Elkin, M.D.*, (Civ. Action No. 09-cv-00322 DSD/JJK) (D. Min.) – 2009-2011.

- Testifying expert for IPCom in *HTC Corporation, et. al. v. IPCom GMBH & Co., KG* (Civil Action No. 1:08- cv- 01897- RMC) (D.C.) - Summer 2009 and ongoing.

- Consultant to General Patent Corporation and IpVenture, Inc. in connection with a pre-filing investigation for potential patent litigation involving the WebVan patent portfolio. - Summer 2009.

- Consultant to Motorola, Inc., Cisco Systems, Inc., Scientific-Atlanta, Inc., ARRIS Group, Inc., Thomson, Inc., NETGEAR, Inc. and Ambit Microsystems, Inc. in *Motorola, Inc. et al. v. Rembrandt Technologies, Inc.*, (D. Del. C.A. No. 07-CV-752) and *In Re Rembrandt Technologies*, LP Patent Litigation (D. Del. C.A. No. 07-md-1848) - Spring/Summer 2009.

- Consultant to McKesson Corporation in *Hospital Systems Corporation, v. General Electric Company D/B/A GE Healthcare; FUJIFILM Medical Systems U.S.A., Inc.; Siemens Medical Solutions USA, Inc.; Philips Electronics North America Corporation; and McKesson Corporation*, - Summer 2008.

Legal - Continued

- Consultant to McKesson Corporation in *Document Generation Corporation v. Allmeds, Inc., Allscripts, LLC, Cerner Corporation, Healthport, Inc., eClinicalworks, Llc, Sage Software Healthcare, Inc., Amt Solutions, Inc., a/k/a E-Mds, Inc., iMedica Corporation, McKesson Corporation, Medinotes Corporation, Misys Healthcare Systems, LLC, Nextgen Healthcare Information Systems, Inc., Noteworthy Medical Systems, Inc., Infor-Med Medical Information Systems, Inc., Pulse Systems, Inc., f/k/a Advanced Health Care Systems, Inc., SSImed, LLC, Physician Micro Systems, Inc., and A4 Health Systems, Inc.*, - Summer 2008.

- Consultant to Radiant Systems in *Radiant Systems, Inc. v. Ameranth, Inc.* (Civil Action No. 1:07-CV-1641 TCB) (N.D. GA) - 2007-2008.

- Consultant to Witness Systems in *NICE Systems, Inc. & NICE Systems Ltd. v. Witness Systems, Inc.*, U.S.D.C. (D. Del.) - Civil Action No. 1:06-CV-00311-JJF - 2007-2008.

- Consultant to Sprint Nextel in *Telematics Corporation v. United Parcel Service Co. et al., Civil Action No. 1-7-cv-00105 (N.D. Ga.)* – 2007.

- Consultant to Witness Systems in *Witness Systems, Inc. v. NICE Systems, Inc. & NICE Systems LTD* USDC-N.D. Ga. Case No.: 1:06-CV-0126-RLV - 2005-2008.

- Consultant to Witness Systems in *Witness Systems v. NICE Systems, Inc. and NICE Systems, Ltd.* (Civil Action No. 1:04-CV-2531-CAP) (N.D.GA.) - 2005-2008.

- Consultant to Witness Systems in *STS Software Systems, Ltd. v. Witness Systems, Inc.* (Civil Action No. 1:04-CV-2111-RWS) (N.D.GA.) - 2004-2008.

- Consultant to Kodak in *Eastman Kodak Company v. Sony Corporation et al.* (Case No. 04-CV-6095 T) (W.D.N.Y.) and Sony Corporation and Sony Electronics Inc. v. Eastman Kodak Company (Case No. 04-CV-6547T) (W.D.N.Y.) - 2005-2006.

- Consultant to Valve in *iEntertainment, Inc. v. Valve LLC and Vivendi Universal Games, Inc.* (M.D.N.C. 2004) - 2004-2005.

- Consultant to Witness Systems in *Knowlagent v. Witness Systems* - Summer 2004.

- Consultant to Don Ratliff in *CAPS Logistics, Inc. v. H. Donald Ratliff et al.* (Fulton Superior Court, Ga. 2003) - Winter 2004.

Other

- Consultant to Chadwick Martin Bailey, a custom market research and consulting firm in Boston, MA, regarding an evaluation of technology, software development practices, and team. - December 2008.

- Consultant to Olodo.com, a travel services company in Atlanta, GA, regarding an evaluation of software development practices and team. - July 2005.

- Consultant to Scientific Logistics, a transportation logistics company in Atlanta, GA, regarding technical strategies. - October 2005.

Walter Overby - Publications

- Overby, Walter. System and method for organizing and presenting evidence relevant to a set of statements. US Patent Application 20100217717 A1, filed February 16, 2010.

ATTACHMENT H

DAN SCHONFELD

ECE Dept. (M/C 154)
University of Illinois at Chicago (UIC)
851 S. Morgan Street – 1020 SEO
Chicago, IL 60607-7053
URL: http://www.ece.uic.edu/~ds

Phone: (312) 996-5847
Fax: (312) 996-6465
Google: (872) 216-2844
Skype: dan_schonfeld
E-mail: dans@uic.edu

A. TABLE OF CONTENTS

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B. PROFESSIONAL BIOGRAPHY

Dr. Schonfeld received the B.S. degree in Electrical Engineering and Computer Science from the University of California, Berkeley, California, and the M.S. and Ph.D. degrees in Electrical and Computer Engineering from The Johns Hopkins University, Baltimore, Maryland, in 1986, 1988, and 1990, respectively.

In August 1990, he joined the Department of Electrical Engineering and Computer Science at the University of Illinois, Chicago, Illinois, where he is currently a Professor in the Departments of Electrical and Computer Engineering, Computer Science, and Biomedical Engineering. He has also served as Director of the University-Industry Engineering Research Center (UIERC), also known as the Manufacturing Research Center (MRC). He is also Co-Director of the Multimedia Communications Laboratory (MCL) and member of the Signal and Image Research Laboratory (SIRL).

Dr. Schonfeld has been elevated to the rank of Fellow of the IEEE "for contributions to image and video analysis." He was also elevated to the rank of Fellow of the SPIE "for specific achievements in morphological image processing and video analysis." Dr. Schonfeld has been elected University Scholar of the University of Illinois and received the Graduate Mentoring Award of the University of Illinois at Chicago.

Dr. Schonfeld has authored over 250 technical papers in various journals and conferences. He was co-author (with Carlo Giulietti and Rashid Ansari) of a paper that won the Best Paper Award at the ACM Multimedia Workshop on Advanced Video Streaming Techniques for Peer-to-Peer Networks and Social Networking 2010. He was also co-author (with Junlan Yang) of a paper that won the Best Student Paper Award in the IEEE International Conference on Image Processing 2007. He was also co-author (with Wei Qu) of a paper that won the Best Student Paper Award in the IEEE International Conference on Image Processing 2006. He was also co-author (with Nidhal Bouaynaya) of a paper that won the Best Student Paper Award in Visual Communication and Image Processing 2006.

Dr. Schonfeld has served as Editor-in-Chief of the IEEE Transactions on Circuits and Systems for Video Technology. He has also served as Deputy Editor-in-Chief of the IEEE Transactions on Circuits and Systems for Video Technology as well as Area Editor for Special Issues of the IEEE Signal Processing Magazine. He has also served as Associate Editor of the IEEE Transactions on Image Processing (on image and video storage, retrieval and analysis), Associate Editor of the IEEE Transactions on Circuits and Systems for Video Technology (on video analysis), Associate Editor of the IEEE Transactions on Signal Processing (on multidimensional signal processing and multimedia signal processing), and Associate Editor of the IEEE Transactions on Image Processing (on nonlinear filtering). He has also served on the editorial board of various journal publications. He has also served as guest editor for numerous special issues in various journal publications.

Dr. Schonfeld is currently serving on the Conference Board of the IEEE Signal Processing Society. He has also served as Technical Program Chair of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2018. He was also organizer of the Thematic Symposium on Multimedia Search and Retrieval at the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2009. He has also served as General Chair of the International Conference on Internet Multimedia Computing and Service (ICIMCS) 2018, the IEEE Conference on Visual Communication and Image Processing (VCIP) 2016, the Workshop on Big Data in 3D Computer Vision 2013, and the IEEE International Conference on Multimedia and Expo (ICME) 2012. He has also served as Program Chair of the IEEE Conference on Visual Communication and Image Processing (VCIP) 2015. He has also served as Technical Program Chair of the IEEE Workshop on Genomic Signal Processing and Statistics (GENSIPS) 2009 as well as Chair of the Workshop on Video Mining 2008. He has also served as Chair of the SPIE Conference on Visual Communication and Image Processing (VCIP) 2007. He was a member of the organizing committees of the

3

IEEE International Conference on Image Processing (ICIP) 1998, 2012, 2018, and 2020, IEEE/SPIE International Conference on Visual Communications and Image Processing (VCIP) 2007, 2010, 2015, 2016, and 2017, and IEEE Workshop on Nonlinear Signal and Image Processing (NSIP) 1997.

Dr. Schonfeld was keynote speaker at the N-Brain Alliance Launch & Product Release Conference 2018 as well as Think for Education Conference (TEC) AI+Education 2018. He was also keynote speaker at the International Conference on Wireless Communications and Signal Processing (WCSP) 2016. He was also keynote speaker at the International Conference on Intelligent Control and Information Processing (ICICIP) 2013 and International Conference on Brain Inspired Cognitive Systems (BICS) 2013. He was also plenary speaker at the IEEE/IET International Conference on Audio, Language and Image Processing (ICALIP), Shanghai, China, in 2010. He was also plenary speaker at the IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS), Genoa, Italy, in 2009. He was also plenary speaker at the INPT/ASME International Conference on Communications, Signals, and Systems (ICCSS), Rabat Morocco, in 1995 and 2001.

Dr. Schonfeld has served as Representative of Regions 1-6 (North America) in the Chapters Committee of the IEEE Signal Processing Society. He has also served as Chairman of the Chicago Chapter of the IEEE Signal Processing Society. He is currently serving on the IEEE Multimedia Communications Technical Committee and IEEE Visual Signal Processing and Communications (VSPC) Technical Committee. He has also served on the IEEE Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee, formerly the IEEE Image and Multidimensional Signal Processing (IMDSP) Technical Committee. He also served on the American National Standards Institute (ANSI) / Underwriters Laboratory (UL) Standards Technical Panel ("STP") on Multimedia Systems.

His current research interests are in signal processing, image and video analysis, video retrieval and communications, multimedia systems, computer vision, medical imaging, and genomic signal processing.

C. RESEARCH INTERESTS

Signal Processing, Image and Video Analysis, Video Retrieval and Communications, Multimedia Systems, Computer Vision, Machine Learning, Medical Imaging, and Genomic Signal Processing.

D. HONORS AND AWARDS

IAM Patent 1000 2015: The World's Leading Patent Practitioners
The Worlds Leading Patent Litigation Expert Witnesses
Fourth Edition
2015

Graduate Mentoring Award
University of Illinois at Chicago
2014

University Scholar
University of Illinois
2010

4

Fellow
Asia-Pacific Artificial Intelligence Association (AAIA)
2021

Fellow
International Society for Optics and Photonics (SPIE)
 "For Specific Achievements in Morphological Image Processing and Video Analysis"
2011

Fellow
Institute of Electrical and Electronics Engineers (IEEE)
"For Contributions to Image and Video Analysis"
2010

Senior Member
Institute of Electrical and Electronics Engineers (IEEE)
2005

Best Paper Award
C. Giulietti, D. Schonfeld, and R. Ansari
"A Novel Cache Optimization Algorithm and Protocol
for Video Streaming in Pure Peer-to-Peer Networks"
ACM Multimedia Workshop on Advanced Video Streaming Techniques
for Peer-to-Peer Networks and Social Networking
2010

Best Student Paper Award
J. Yang, D. Schonfeld and M. Mohamed
"Robust Focused Image Estimation from Multiple Images in Video Sequences"
IEEE International Conference on Image Processing
2007

Best Student Paper Award
W. Qu and D. Schonfeld
"Robust Kernel-Based Tracking Using Optimal Control"
IEEE International Conference on Image Processing
2006

Best Student Paper Award
N. Bouaynaya and D. Schonfeld
"Spatially-variant morphological image processing: Theory and applications"
SPIE Conference on Visual Communications and Image Processing
2006

Advising Award
College of Engineering
University of Illinois at Chicago
2013

Outstanding Associate Editor Award – IEEE Circuits and Systems Society
IEEE Circuits and Systems Society

5

IEEE Transactions on Circuits and Systems for Video Technology
2009

Most Active Chapter Award – IEEE Signal Processing Chicago Chapter Chair
IEEE – Region 4
2008

Service Award – IEEE Signal Processing Chicago Chapter Chair
IEEE – Chicago Section
2007

Certificate of Appreciation – IEEE Signal Processing Society
Chair, IEEE Signal Processing Chapter
Chicago Section
2006-2012

Certificate of Appreciation – IEEE Circuits and Systems Society
IEEE Circuits and Systems Society
Prize Paper Award Subcommittee
2010

Certificate of Appreciation – IEEE Circuits and Systems Society
IEEE Circuits and Systems Society
Deputy Editor-in-Chief of the IEEE Transactions on Circuits and Systems for Video Technology
2008 – 2010

Certificate of Appreciation – IEEE Circuits and Systems Society
IEEE Circuits and Systems Society
Associate Editor of the IEEE Transactions on Circuits and Systems for Video Technology
2008 – 2010

Certificate of Appreciation – IEEE Signal Processing Chicago Chapter Chair
IEEE – Chicago Section
2006

Top Reviewer Recognition Certificate
IEEE International Conference on Image Processing (ICIP)
Abu Dhabi, United Arab Emirates
2020

2018 Albert Nelson Marquis Lifetime Achievement Award
Marquis Who's Who

Who's Who in the World
2021 Edition

Who's Who in the World
2020 Edition

Who's Who in the World
2019 Edition

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Who's Who in the World
2018 Edition

Worldwide Who's Who
2014 Edition

Who's Who in America (WWA)
2019 Edition

Who's Who in America (WWA)
2012 Edition

Who's Who in America (WWA)
2011 Edition

Who's Who in America (WWA)
2010 Edition

Who's Who in Engineering Education (WWEE)
2002 Edition

University Fellowship
The Johns Hopkins University
1986—1990

E. IN THE NEWS

IEEE Fellow Dan Schonfeld: Helping Catch Thieves & Read Fuzzy Faxes
e-Scanfax: IEEE Chicago Section Newsletter
January 2010
http://www.ieeechicago.org/LinkClick.aspx?fileticket=Py81tdr4GTM%3D&tabid=390&mid=884

IEEE-Chicago Fellows Provide Words of Wisdom to New IEEE Members
e-Scanfax: IEEE Chicago Section Newsletter
May 2010
http://www.ieeechicago.org/LinkClick.aspx?fileticket=2GIDPZnZQ_M%3D&tabid=390&mid=884

What You See, What You Get
University Scholar Dan Schonfeld
Paul Francuch
UIC News
November 10, 2010
http://www.uic.edu/htbin/cgiwrap/bin/uicnews/articledetail.cgi?id=14769

Genomic Signal Processing May Yield Clues to Cancer Treatment
Paul Francuch
UIC News Release
November 17, 2010

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http://tigger.uic.edu/htbin/cgiwrap/bin/newsbureau/cgi-bin/index.cgi?
from=Releases&to=Release&id=3073&start=1232172000&end=1329285600&topic=2&dept=64

New Camera Focuses Photos After They Are Taken
Morgen Peck
InnovationNewsDaily Contributor
November 4, 2011
http://www.innovationnewsdaily.com/camera-focuses-photos-after-2358/

F. EDUCATION

Ph.D. July 1990
The Johns Hopkins University
Department of Electrical & Computer Engineering
Concentration: Nonlinear Signal Processing / Image Analysis
Thesis Title: "Optimal Morphological Representation and Restoration of Binary Images:
Theory and Applications"
First Reader: Prof. John Goutsias; Second Reader: Prof. Victor Solo

M.S. May 1988
The Johns Hopkins University
Department of Electrical & Computer Engineering
Concentration: Speech Processing / Biomedical Signal Processing
Advisor: Prof. Moise H. Goldstein

B.S. May 1986
University of California at Berkeley
Department of Electrical Engineering & Computer Science
Concentration: Computer Engineering / Systems Engineering
Advisor: Prof. Michael J. Sabin

G. WORK EXPERIENCE

Director
Manufacturing Research Center (MRC)
University-Industry Engineering Research Center (UIERC)
College of Engineering
University of Illinois at Chicago
Chicago, Illinois
2008—2011

Professor with Tenure
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2007—Present

Professor (Courtesy Appointment)
Department of Computer Science
University of Illinois at Chicago
Chicago, Illinois
2007— 2025

Professor
Department of Biomedical Engineering
University of Illinois at Chicago
Chicago, Illinois
2021— Present

Professor
Department of Bioengineering
University of Illinois at Chicago
Chicago, Illinois
2007— 2021

Associate Professor with Tenure
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2001—2007

Associate Professor (Courtesy Appointment)
Department of Computer Science
University of Illinois at Chicago
Chicago, Illinois
2001—2007

Associate Professor
Department of Bioengineering
University of Illinois at Chicago
Chicago, Illinois
1998—2007

Associate Professor with Tenure
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
Chicago, Illinois
1996—2001

Co-Director
Multimedia Communications Laboratory (MCL)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
1997—Present

Assistant Professor
Department of Electrical Engineering & Computer Science

9

University of Illinois at Chicago
Chicago, Illinois
1990—1996

Member
Signal and Image Research Laboratory (SIRL)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
1990—2002

Instructor
Department of Electrical and Computer Engineering
The Johns Hopkins University
Baltimore, Maryland
1987—1990

Teaching Assistant
Department of Electrical and Computer Engineering
The Johns Hopkins University
Baltimore, Maryland
1986—1990

Software Engineer
Computer Aided Design
Teledyne Systems
Northridge, California
Summer 1984—85—86

H. CONSULTING EXPERIENCE

Consultant & Expert Witness
2001—Present

Consulting Activities:
Deposition and Trial Testimony
Patent Litigation
Copyright Litigation
Trade Secret Litigation
International Trade Litigation
Customs Litigation
Contract Litigation

Areas of Expertise:
Multimedia Systems
Multimedia Retrieval, Storage, and Communication Systems
Image and Video Processing
Signal Processing and Communications

Examples of Previous Litigation Experience:
Cable Systems
Camera Systems
Graphics Processors
Image Compression Systems
Image Processing Systems
Internet Advertising
Internet Streaming
Jukebox Systems
Medical Imaging
Signal Processing
Smartphones and Tablets
Television Systems
Video-on Demand (VoD) Systems
Video Compression Systems
Video Storage Systems
Video Streaming Systems
Wireless Systems

Companies:
Served as a consultant and expert witness for various companies including ARRIS, Blackberry, Broadcom, Cablevision, Cisco, Dell, Google, Hewlett-Packard, Huawei, Motorola, NVIDIA, Panasonic, Qualcomm, Samsung, Time Warner, Zeiss.

Consultant & President
Schonfeld Consulting Corporation
Multimedia Systems
Northbrook, Illinois
2017—Present

Consultant & President
Multimedia Systems Corporation
Multimedia Systems
Glenview, Illinois
2002—2005

Consultant
Chicago Merchantile Exchange
Multimedia Communication Networks
Chicago, Illinois
1998

Consultant
PrairieComm Corp.
Multimedia Wireless Networks
Arlington Heights, Illinois
1997

11

I. VISITING POSITIONS

Distinguished Visiting Scholar
Advanced Analytics Institute (AAI)
University of Technology
Sydney, Australia
2012

Visiting Professor
Department of Information Engineering and Computer Science - DISI
University of Trento
Trento, Italy
May 2010

Visiting Professor
School of Computer Engineering
Nanyang Technological University
Singapore
July 2009

Visiting Associate Professor
Department of Electrical Engineering—Systems
Tel-Aviv University
Tel-Aviv, Israel
December 1996—January 1997

J. INTERDISCIPLINARY PROGRAMS

Collaborative Neuroimaging Environment for Connectomics (CoNECT)
University of Illinois at Chicago
2013—Present

Clinical and Translational Science (CCTS)
Biomedical Informatics Core Consult Group
University of Illinois at Chicago
2009—Present

Graduate Program in Neuroscience
University of Illinois at Chicago
2001—Present

Bioinformatics Program
Department of Bioengineering
University of Illinois at Chicago
2000—Present

K. PROFESSIONAL ACTIVITIES

K.1. Editorships

Editor-in-Chief (EIC)
IEEE Transactions on Circuits and Systems for Video Technology
2014—2017

Deputy Editor-in-Chief (DEIC)
IEEE Transactions on Circuits and Systems for Video Technology
2010—2013

Area Editor, Special Sections
Special Issues
IEEE Signal Processing Magazine
2009—2011

Editor
Video Search and Mining
Studies in Computational Intelligence Series
Springer-Verlag
2009

Associate Editor
IEEE Transactions on Image Processing
Image and Video Storage, Retrieval and Analysis
2007—2009

Associate Editor
IEEE Transactions on Circuits and Systems for Video Technology
Video Analysis
2006—2009

Associate Editor
IEEE Transactions on Signal Processing
Multidimensional Signal Processing &
Multimedia Signal Processing
1999—2000

Associate Editor
IEEE Transactions on Image Processing
Filtering and Enhancement
1994—1996

Guest Editor
IEEE Journal of Special Topics in Signal Processing
Special Issue on Mathematical Morphology
and Its Applications to Image and Signal Processing

13

2011—2012

Guest Editor
IEEE Transactions on Image Processing
Special Issue on Distributed Camera Networks:
Sensing, Processing, Communication and Computing
2010—2011

Guest Editor
EURASIP Journal on Image and Video Processing
Special Issue on Advanced Video-Based Surveillance
2010—2011

Lead Guest Editor
IEEE Journal of Special Topics in Signal Processing
Special Issue on Recent Advances in Video Processing for Consumer Displays
2009—2011

Guest Editor
IEEE Transactions on Circuits and Systems for Video Technology
Special Issue on Event Analysis in Videos
2008

Lead Guest Editor
IEEE Journal of Special Topics in Signal Processing
Special Issue on Genomic and Proteomic Signal Processing
2007—2008

Guest Editor
Journal of Advances in Multimedia
Special Issue on Plenoptic Signal and Image Processing
2007—2008

Advisory Board
Bentham Books
Bentham Science
2021—Present

Editorial Board
Sensors
MDPI
2021—Present

Editorial Board
Recent Advances in Computer Science and Communications
Bentham Science Publishers, Ltd.
2012—Present

Editorial Board
Journal of Electrical and Computer Engineering
Hindawi Publishing Corporation

14

2009— 2019

Editorial Board
EURASIP Journal of Image and Video Processing
2009—2013

Editorial Board
IEEE Signal Processing Magazine
2008—2011

Editorial Board
Research Letters in Signal Processing
Hindawi Publishing Corporation
2007—2009

Editorial Board
Recent Patents on Computer Science
Bentham Science Publishers, Ltd.
2007—2019

Editorial Board
Recent Patents on Electrical Engineering
Bentham Science Publishers, Ltd.
2007—2012

Contributor
Science and Technology: SPIE Newsroom
Electronic Imaging and Signal Processing
2005—2008

K.2. Committees

Moving Picture, Audio and Data Coding by Artificial Intelligence (MPAI)
2020

MPEG Future
2020–Present

Ad-Hoc Committee of the Conferences Board on Flagship Conferences Future Strategy
IEEE Signal Processing Society
2020-2021

Ad-Hoc Committee on Multi-Scale Models at SPS Flagship Conferences
IEEE Signal Processing Society
2019-2020

IEEE Signal Processing (SPS) Liaison
IEEE Signal Processing Society
2019-2021

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Conference Board
IEEE Signal Processing Society
2019-2020

Award Committee
Association for Computing Machinery (ACM)
ACM Multimedia
2020

Best Paper Award Selection Committee
CSVT Best Paper Award
IEEE Circuits and Systems Society
2020—2021

Best Paper Award Selection Committee
CSVT Best Paper Award
IEEE Circuits and Systems Society
2019—2020

Best Paper Award Selection Committee
CSVT Best Paper Award
IEEE Circuits and Systems Society
2013

Steering Committee
International Association for Pattern Recognition (IAPR)
Discrete Geometry and Mathematical Morphology (DGMM)
2022—Present

Travel Grant Selection Committee
IEEE Signal Processing Society
IEEE International Conference on Image Processing
2011

Steering Committee
International Society of Mathematical Morphology (ISMM)
International Symposium on Mathematical Morphology (ISMM)
2011—Present

Advisory Committee
IEEE Circuits and Systems Society
Visual Signal Processing and Communication (VSPC) Technical Committee
IEEE Conference on Visual Communications and Image Processing (VCIP)
2010— Present

Steering Committee
SPIE and IEEE Circuits and Systems Society
Conference on Visual Communications and Image Processing
2008—2010

Scientific Advisory Board

World Congress of NeuroTalk
From Nervous Functions to Treatment
Singapore Expo, Singapore
2010

Chair
Nominations and Elections Subcommittee
Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee
IEEE Signal Processing Society
2010— 2011

Honorable Member
Visual Signal Processing and Communications (VSPC) Technical Committee
IEEE Circuits and Systems Society
2018— Present

Member
Visual Signal Processing and Communications (VSPC) Technical Committee
IEEE Circuits and Systems Society
2015— 2019

Associate Member
Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee
IEEE Signal Processing Society
2014— Present

Member
IEEE Multimedia Communications Technical Committee (MMTC) Technical Committee
IEEE Communications Society
2009— Present

Member
Image, Video, and Multidimensional Signal Processing (IVMSP) Technical Committee
IEEE Signal Processing Society
2009— 2012

Member
Image and Multidimensional Signal Processing (IMDSP) Technical Committee
IEEE Signal Processing Society
2007—2008

Member
Signal and Image Processing in Medicine Technical Committee
IEEE Circuits and Systems Society
1990—1996

Member
P2P Communication and Networking Technical Subcommittee
Multimedia Communications Technical Committee
IEEE Communications Society
2006—Present

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Representative
Regions 1-6 (North America)
Chapters Committee
IEEE Signal Processing Society
2006—2012

Chairman
Chicago IEEE Signal Processing Chapter
2006—2012

Member
American National Standards Institute/Underwriters Laboratory (ANSI/UL)
Standards Technical Panels (STP)
STP 1863: Communications-Circuit Accessories
     UL 1863: Standard for Communications-Circuit Accessories
STP 6065: Audio, Video And Similar Electronic Apparatus - Safety Requirements
     UL 150: Standard for Antenna Rotators
     UL 452: Standard for Antenna – Discharge Units
     UL 469: Standard for Musical Instruments and Accessories
     UL 813: Standard for Commercial Audio Equipment
     UL 1412: Standard for Fusing Resistors and Temperature-Limited Resistors for Radio- and Television-Type Appliances
     UL 1413: Standard for High-Voltage Components for Television-Type Appliances
     UL 1416: Standard for Overcurrent and Overtemperature Protectors for Radio- and Television-Type Appliances
     UL 1417: Standard for Special Fuses for Radio- and Television-Type Appliances
     UL 1492: Audio/Video Products and Accessories
     UL 1676: Standard for Conductive-Path and Discharge-Path Resistors for Use in Radio-, Video-, or Television-Type Appliances
     UL 6500: Standard for Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use
     UL 60065: Standard for Audio, Video and Similar Electronic Apparatus – Safety Requirements
STP 6268: Audio/Video, Information Technology, And Communication Technology Equipment
     UL 62368: Audio/video, Information and Communication Technology Equipment
STP 9990: Information and Communication Technology (ICT) Cables
     UL 9990: Standard for Safety for Information and Communication Technology (ICT) Power Cables
2002—Present

K.3. Review Panels

Member
Expert Panel
Faculty of Computing and Electrical Engineering
Tampere University of Technology (TUT)
Tampere, Finland
2011

Member
Paper Award Committee
IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)
Genoa, Italy
2009

Member
Technical Jury
NTT DoCoMo USA Labs Most Innovative Paper Awards
IEEE International Conference on Image Processing
San Diego, California
2008

Member
Technical Jury
NTT DoCoMo USA Labs Most Innovative Paper Awards
IEEE International Conference on Image Processing
San Antonio, Texas
2007

Member
Technical Jury
NTT DoCoMo USA Labs Most Innovative Paper Awards
IEEE International Conference on Image Processing
Atlanta, Georgia
2006

Member
NSF Review Panel
Computer & Information Science & Engineering (CISE)
Computing and Communication Foundations (CCF)
Image and Multi-Dimensional Signal Processing (IMDSP)
2015

Member
NSF Review Panel
Computer & Information Science & Engineering (CISE)
Computing and Communication Foundations (CCF)
Communications and Information Foundations (CIF)
2012

Member
NSF Review Panel
Computer & Information Science & Engineering (CISE)
Computing and Communication Foundations (CCF)
Communications and Information Foundations (CIF)
2011

Member
NSF Review Panel

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Computer & Information Science & Engineering (CISE)
Information & Intelligent Systems (IIS)
Databases and Data Mining (DB/DM)
2007

Member
NSF Review Panel
Small Business Innovation Research (SBIR) Program
Robotics II
Phase II
2007

Member
NSF Review Panel
Computer & Information Science & Engineering (CISE)
Information & Intelligent Systems (IIS)
Information Management (IM)
2006

Member
NSF Review Panel
Computer & Information Science & Engineering (CISE)
Information & Intelligent Systems (IIS)
Information & Knowledge Management (IKM)
2005

Member
NSF Review Panel
Small Business Innovation Research (SBIR) Program
Robotics II
Phase I
2005

Member
NSF Review Panel
Computer & Information Science & Engineering (CISE)
Advanced Networking Infrastructure and Research (ANIR)
Information Technology Research (ITR)
Networking Research
Small Grants
2002

Member
NSF Review Panel
Small Business Innovation Research (SBIR) Program
Diagnostic Systems and Signal Processing
Phase I
2002

Member
NSF Review Panel

20

Computer & Information Science & Engineering (CISE)
Information Technology Research (ITR)
Biology & Information Technology
Computational Biology / Biocomputation
Medium Grants
2003

K.4. Conference Chair

General Chair
International Conference on Internet Multimedia Computing and Service (ICIMCS)
Nanjing, China
2018

Technical Program Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
Calgary, Canada
2018

General Co-Chair
IEEE Conference on Visual Communications and Image Processing (VCIP)
Chengdu, China
2016

Program Co-Chair
IEEE Conference on Visual Communications and Image Processing (VCIP)
Singapore
2015

General Co-Chair
Workshop on Big Data in 3D Computer Vision
Held in conjunction with the IEEE International Conference on Computer Vision (ICCV)
Melbourne, Australia
2013

General Co-Chair
IEEE International Conference on Multimedia and Expo (ICME)
Melbourne, Australia
2012

Technical Program Chair
IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS)
Minneapolis, Minnesota
2009

Chair
Workshop on Video Mining
IEEE International Conference on Data Mining
Held in conjunction with the IEEE International Conference on Data Mining (ICDM)
Pisa, Italy

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2008

Chair
SPIE International Conference on Visual Communications and Image Processing (VCIP)
San Jose, California
2007

Multimedia Content Analysis Track Chair
IEEE International Conference on Multimedia and Expo
New York, New York
2009

Technical Program Committee / Area Chair
IEEE International Conference on Image Processing
San Diego, California
2008

Technical Program Committee / Area Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing
Las Vegas, Nevada
2008

Technical Program Committee / Area Chair
IEEE International Conference on Image Processing
San Antonio, Texas
2007

Associate Program Chair
ACM Multimedia
Juan Les Pins, France
2002

K.5. Organizing Committees

Special Sessions Co-Chair
IEEE International Conference on Image Processing (ICIP)
Abu Dhabi, United Arab Emirates
2020

Technical Program Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
Calgary, Canada
2018

Plenary Co-Chair
IEEE Conference on Visual Communications and Image Processing (VCIP)
St. Petersburg, Florida
2017

General Co-Chair

IEEE Conference on Visual Communications and Image Processing (VCIP)
Chengdu, China
2016

Program Co-Chair
IEEE Conference on Visual Communications and Image Processing (VCIP)
Singapore
2015

General Co-Chair
Workshop on Big Data in 3D Computer Vision
Held in conjunction with the IEEE International Conference on Computer Vision (ICCV)
Melbourne, Australia
2013

General Co-Chair
IEEE International Conference on Multimedia and Expo (ICME)
Melbourne, Australia
2012

Plenary Chair
IEEE International Conference on Image Processing (ICIP)
Orlando, Florida
2012

Publications Chair
IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS)
Beijing, China
2012

USA Liaison Chair
IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS)
Klagenfurt, Austria
2011

Publicity Co-Chair
IEEE/SPIE International Conference on Visual Communications and Image Processing (VCIP)
Huang Shan, An Hui, China
2010

Technical Program Chair
IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS)
Minneapolis, Minnesota
2009

Organizer
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
Thematic Symposium on Multimedia Search and Retrieval
Taipei, Taiwan
2009

23

Chair
Workshop on Video Mining
Held in conjunction with the IEEE International Conference on Data Mining (ICDM)
Pisa, Italy
2008

Chair
SPIE International Conference on Visual Communications and Image Processing (VCIP)
San Jose, California
2007

Technical Organizing Committee
IS&T/SPIE Annual Symposium on Electronic Imaging: Science and Technology
San Jose, California
2007

Publications Chair
IEEE International Conference on Image Processing
Chicago, Illinois
1998

Plenary Talks and Special Session Chair
IEEE/EURASIP Workshop on Nonlinear Signal and Image Processing
Mackinac Island, Michigan
1997

K.6. Technical Program Committees

Technical Program Committee
SPIE Conference on Video Surveillance and Transportation Imaging
San Francisco, California
2015

Technical Program Committee
SPIE Conference on Video Surveillance and Transportation Imaging
San Francisco, California
2014

Program Committee
IEEE International Conference on Automatic Face and Gesture Recognition (FG 2013)
Shanghai, China
2013

Technical Program Committee
SPIE Conference on Video Surveillance and Transportation Imaging
San Francisco, California
2013

Technical Program Committee
SPIE Conference on Visual Information Processing and Communication

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San Francisco, California
2013

Technical Program Committee
ICST International Conference on
Wireless Mobile Communication and Healthcare (MobiHealth)
Paris, France
2012

Technical Program Committee
SPIE Conference on Visual Information Processing and Communication
San Francisco, California
2012

Program Committee
International Workshop on Video Event Categorization, Tagging and Retrieval (VECTaR)
Held in conjunction with the International Conference on Computer Vision
Barcelona, Spain
2011

Technical Program Committee
ICST International Conference on
Wireless Mobile Communication and Healthcare (MobiHealth)
Kos Island, Greece
2011

Technical Program Committee
SPIE Conference on Visual Information Processing and Communication
San Francisco, California
2011

Technical Program Committee
IEEE International Workshop on Genomic Signal Processing and Statistics
Cold Spring Harbor Laboratory, New York
2010

Technical Program Committee
IEEE International Conference on Multimedia and Expo (ICME)
Singapore
2010

Technical Program Committee
International Conference on Pattern Recognition (ICPR)
Track I: Computer Vision
Istanbul, Turkey
2010

Technical Program Committee
ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC)
Atlanta, Georgia
2010

25

Technical Program Committee
IEEE Workshop on Multimedia Computing and Communications (MCC)
Held in conjunction with the International Conference on Computer Communications and Networks (ICCCN)
Zurich, Switzerland
2010

Program Committee
ACM International Conference on Bioinformatics and Computational Biology (ACM-BCB)
Niagara Falls, New York
2010

Technical Program Committee
IEEE/SPIE International Conference on Visual Communications and Image Processing
Huang Shan, An Hui, China
2010

Technical Program Committee
ICST International Conference on
Wireless Mobile Communication and Healthcare (MobiHealth)
Ayia Napa, Cyprus
2010

Technical Program Committee
SPIE International Conference on Visual Information Processing and Communications
San Jose, California
2010

Program Committee
International Workshop on Video Event Categorization, Tagging and Retrieval (VECTaR)
Held in conjunction with the Asian Conference on Computer Vision
Xi'an, China
2009

Program Committee
IEEE International Workshop on Video-Oriented Object and Event Classification (VOEC)
Held in conjunction with the International Conference on Computer Vision (ICCV)
Kyoto, Japan
2009

Program Committee / Reviewer
IEEE International Conference on Computer Vision
Kyoto, Japan
2009

Technical Program Committee
IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)
Genoa, Italy
2009

26

Technical Program Committee
IEEE Workshop on Multimedia Computing and Communications (MCC)
Held in conjunction with the International Conference on Computer Communications and Networks
(ICCCN)
San Francisco, California
2009

Technical Program Committee
International Conference on Image and Graphics
Xi'an, China
2009

Program Committee
International Conference on Advances in Multimedia (MMEDIA)
Colmar, France
2009

Technical Program Committee
IEEE International Workshop on Computational Advances
in Multi-Sensor Adaptive Processing (CAMSAP)
Dominican Republic
2009

Technical Program Committee
SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2009

Technical Program Committee / Reviewer
IEEE International Conference on Image Processing
San Diego, California
2008

Program Committee
IEEE Conference on Computer Vision and Pattern Recognition
Anchorage, Alaska
2008

Technical Program Committee / Reviewer
IEEE International Conference on Acoustics, Speech, and Signal Processing
Las Vegas, Nevada
2008

Technical Program Committee
IEEE International Workshop on Genomic Signal Processing and Statistics
Phoenix, Arizona
2008

Technical Program Committee
International Workshop on Multimedia Analysis & Processing (IMAP)
U.S. Virgin Islands

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2008

Technical Program Committee
SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2008

Program Committee
IEEE International Conference on Computer Vision
Rio de Janeiro, Brazil
2007

Technical Program Committee / Reviewer
IEEE International Conference on Image Processing
San Antonio, Texas
2007

Technical Program Committee
IEEE International Workshop on Genomic Signal Processing and Statistics
Tuusula, Finland
2007

Technical Program Committee
SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2007

Technical Program Committee
IEEE International Conference on Image Processing
Atlanta, Georgia
2006

Technical Program Committee
IEEE International Workshop on Genomic Signal Processing and Statistics
College Station, Texas
2006

Technical Program Committee
SPIE International Conference on Visual Communications and Image Processing
San Jose, California
2006

Technical Program Committee / Reviewer
IEEE International Conference on Acoustics, Speech, and Signal Processing
Toulouse, France
2006

Technical Program Committee
IEEE International Conference on Image Processing
Genova, Italy
2005

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Technical Program Committee / Reviewer
IEEE International Conference on Acoustics, Speech, and Signal Processing
Philadelphia, Pennsylvania
2005

Technical Program Committee
IEEE International Conference on Image Processing
Singapore
2004

Technical Program Committee
IEEE International Conference on Image Processing
Barcelona, Spain
2003

Technical Program Committee
IEEE International Conference on Image Processing
Rochester, New York
2002

Technical Program Committee
IEEE International Conference on Image Processing
Thessaloniki, Greece
2001

Technical Program Committee
IEEE International Conference on Image Processing
Vancouver, Canada
2000

Technical Program Committee
IEEE International Conference on Image Processing
Kobe, Japan
1999

Technical Program Committee
IEEE International Conference on Image Processing
Chicago, Illinois
1998

Technical Program Committee
International Symposium on Mathematical Morphology
Amsterdam, The Netherlands
1998

Technical Program Committee
SPIE International Conference on Visual Communications and Image Processing
San Jose, California
1998

Technical Program Committee
SPIE International Conference on Visual Communications and Image Processing
San Jose, California
1997

Technical Program Committee
SPIE International Conference on Visual Communications and Image Processing
Orlando, Florida
1996

Technical Program Committee
IEEE International Conference on Image Processing
Austin, Texas
1994

Technical Program Committee
IEEE International Symposium on Circuits and Systems
Chicago, Illinois
1993

K.7. Session Organizer

Chair
IEEE International Conference on Image Processing
Special Session on Face Recognition II
Orlando, Florida
2012

Organizer and Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing
Special Session on Video Search and Event Analysis
Taipei, Taiwan
2009

Organizer
Workshop on Global Multimedia Mobile Communications
University of Illinois at Chicago
Chicago, Illinois
2005

Organizer and Chair
IEEE International Conference on Image Processing
Special Session on Nonlinear Filtering
Austin, Texas
1994

Organizer and Chair
IEEE International Symposium on Circuits and Systems
Special Session on Medical Image and Signal Processing
Singapore

1991

Organizer and Chair
Conference on Information Sciences and Systems
Session on Nonlinear Image and Signal Processing I
Baltimore, Maryland
1991

K.8. Session Chair

Chair
IEEE International Conference on Image Processing
Session on Defect Removal
Taipei, Taiwan
2019

Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Stereoscopic and 3D Processing
Brighton, United Kingdom
2019

Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Image and Video Indexing and Retrieval
Prague, Czech Republic
2011

Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Image/Video Semantic Understanding
Dallas, Texas
2010

Chair
IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS)
Session on Trajectory Analysis and Learning
Genoa, Italy
2009

Chair
IEEE International Conference on Multimedia and Expo
Session on Multimedia Content Analysis and Synthesis IV
New York, New York
2009

Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Stereoscopic and 3-D Processing
Taipei, Taiwan

2009

Chair
IEEE International Conference on Image Processing
Session on Enhancement and Denoising II
San Diego, California
2008

Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Restoration and Enhancement
Las Vegas, Nevada
2008

Chair
SPIE Electronic Imaging Conference on Visual Communications and Image Processing
Session on Image Processing
San Jose, California
2008

Chair
IEEE International Conference on Image Processing
Session on Image and Video Restoration and Enhancement I
San Antonio, Texas
2007

Chair
IEEE International Conference on Image Processing
Session on Image and Video Filtering
Atlanta, Georgia
2006

Chair
IEEE International Conference on Multimedia and Expo
Session on Media Signal Processing
Toronto, Canada
2006

Chair
IEEE International Conference on Multimedia and Expo
Session on Multimedia Database Applications
Toronto, Canada
2006

Chair
IEEE International Conference on Multimedia and Expo
Session on Peer-to-Peer Multimedia Streaming
Toronto, Canada
2006

Chair

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SPIE Electronic Imaging Conference on Visual Communications and Image Processing
Session on Computer Vision
San Jose, California
2006

Chair
IEEE International Conference on Acoustics, Speech, and Signal Processing
Session on Video Segmentation and Tracking
Philadelphia, Pennsylvania
2005

Chair
SPIE Electronic Imaging Conference on Image and Video Communications and Processing
Session on Selective Encryption for Image/Video
San Jose, California
2005

Chair
SPIE Electronic Imaging Conference on Image and Video Communications and Processing
Session on Object Tracking
San Jose, California
2005

Chair
INPT/ASME International Conference on Communications, Signals and Systems
Session on Signals and Data
Rabat, Morocco
2001

Chair
SPIE Conference on Multimedia Storage and Archiving Systems III
Session on Video Segmentation
Boston, Massachusetts
1998

Chair
IEEE International Conference on Image Processing
Session on Image Sequence Segmentation
Chicago, Illinois
1998

Chair
International Symposium on Mathematical Morphology
Session on Theory
Atlanta, Georgia
1996

Chair
INPT/ASME International Conference on Communications, Signals and Systems
Session on Signals and Data
Rabat, Morocco

33

1995

Chair
IEEE Workshop on Nonlinear Signal and Image Processing
Session on Mathematical Morphology and Fuzzy DSP
Neos Marmaras, Halkidiki, Greece
1995

Chair
IEEE International Conference on Image Processing
Session on Shape Representation and Image Modeling
Austin, Texas
1994

Chair
SPIE Conference on Visual Communications and Image Processing
Session on Mathematical Morphology
Boston, Massachusetts
1992

Chair
Conference on Information Sciences and Systems
Session on Signal Representation, Modeling, and Analysis
Baltimore, Maryland
1991

K.9. Panelist and Participant

Panelist
DOD Tri-Service Workshop on Stochastic Methods in Image Analysis
Session on Mathematical Morphology
U.S. Army Harry Diamond Laboratories
Adelphi, Maryland
1992

Participant
Institute for Mathematics and its Applications (IMA)
Workshop on Large Data Sets in Medical Informatics
Minneapolis, Minnesota
2011

Participant
NSF Workshop on Improving Domestic Student Participation
in Electrical and Computer Engineering Graduate Programs
University of Tennessee
Knoxville, Tennessee
2009

Participant
Workshop on Global Multimedia Mobile Communications

University of Illinois at Chicago
Chicago, Illinois
2005

Participant
Workshop on Extraction of Visual Information by Biological and Non-Biological Systems
University of Illinois at Chicago
Chicago, Illinois
2002

Participant
Workshop on Multimedia Information Systems
Capri, Italy
2001

Participant
NSF Advanced Networking Infrastructure Support
National Workshop on Developing Guidance
Research Competitiveness Program
Washington, D.C.
1999

Participant
Institute for Mathematics and its Applications (IMA)
Workshop on Applications and Theory of Random Sets
Minneapolis, Minnesota
1996

Panelist
VCIP 2015 Panel Discussion: What's Next in Visual Communications and Image Processing?
IEEE Conference on Visual Communications and Image Processing (VCIP)
Singapore
2015

K.10. Outreach Activities

Judge
Region 6 Science Fair Paper Session
Illinois Junior Academy of Science
Stevenson High School
Lincolnshire, Illinois
2022

Judge
State Science Fair Poster Session
Illinois Junior Academy of Science
Peoria Civic Center
Peoria, Illinois
2022

L. PUBLICATIONS

L.1. Thesis

[1] D. Schonfeld, *Optimal Morphological Representation and Restoration of Binary Images: Theory and Applications.* Department of Electrical and Computer Engineering, The Johns Hopkins University, Baltimore, Maryland, 1990.

L.2. Books

[1] C.-W. Chen, D. Schonfeld, and J. Liu, (Eds.), *Proceedings of the SPIE/IS&T International Conference on Visual Communications and Image Processing.* SPIE Press, 2007.

[2] D. Schonfeld, C. Shan, D. Tao, and L. Wang, (Eds.), *Video Search and Mining.* Studies in Computational Intelligence Series, Springer-Verlag, 2010.

L.3. Book Chapters

[1] M. Charif-Chefchaouni and D. Schonfeld, "Spatially-Variant Mathematical Morphology: Minimal Basis Representation," *Mathematical Morphology and Its Applications to Image and Signal Processing.* P. Maragos, R.W. Schafer, and M.K. Butt, (ed.), pp. 49-56, Kluwer Academic Publishers: Boston, Massachussets, 1996.

[2] D. Schonfeld, "Weighted Composite Order-Statistics Filters: Optimal Morphological Pattern Recognition," *Mathematical Morphology and Its Applications to Image and Signal Processing.* P. Maragos, R.W. Schafer, and M.K. Butt, (ed.), pp. 163-170, Kluwer Academic Publishers: Boston, Massachussets, 1996.

[3] D. Schonfeld, "Image and Video Communication Networks," (**Invited Chapter**). *Handbook of Image and Video Processing.* A. Bovik (ed.), Academic Press: San Diego, California, Chapter 9.3, pp. 717-732, 2000.

[4] D. Lelescu and D. Schonfeld, "Video skimming and summarization based on principal component analysis," *Management of Multimedia on the Internet*, Lecture Notes in Computer Science, E.S. Al-Shaer and G. Pacifici (Eds.), Springer-Verlag, pp. 128-141, 2001.

[5] F. Bashir, S. Khanvilkar, A. Khokhar, and D. Schonfeld, "Multimedia systems: Content based indexing and retrieval," (**Invited Chapter**). *Electrical Engineering Handbook.* W-K. Chen (ed.), Academic Press: San Diego, California, pp. 379-400, 2004.

[6] S. Khanvilkar, F. Bashir, D. Schonfeld, and A. Khokhar, "Multimedia networks and communication," (**Invited Chapter**). *Electrical Engineering Handbook.* W-K. Chen (ed.), Academic Press: San Diego, California, pp. 401-425, 2004.

[7] D. Schonfeld, "Video Communication Networks," (**Invited Chapter**). *Handbook of Image and Video Processing. Second Edition.* A. Bovik (ed.), Academic Press: San Diego, California, Chapter 9.3, pp. 1031-1064, 2005.

[8]   D. Schonfeld, "Video Communication Networks," (**Invited Chapter**). *The Essential Guide to Video Processing.* A. Bovik (ed.), Elsevier: Chennai, India, Chapter 16, pp. 473-526, 2009.

[9]   X. Ma, X. Chen, A. Khokhar, and D. Schonfeld, "Motion trajectory-based video retrieval, classification, and summarization," *Video Search and Mining*. Studies in Computational Intelligence Series, Springer-Verlag, pp. 53-82, 2010.

[10]   J. J. GadElkarim, D. Schonfeld, O. Ajilore, L. Zhan, A. Zhang, J.D. Feusner, P. M. Thompson, T. J. Simon, A. Kumar, and A. D. Leow, "A framework for quantifying node-level community structure group differences in brain connectivity networks," *Medical Image Computing and Computer-Assisted Intervention – MICCAI, Lecture Notes in Computer Science.* Vol. 7511, pp. 196-203, 2012.

[11]   N. Bouaynaya, R. Shterenberg, D. Schonfeld, and H. M. Fathallah-Shaykh, "Intervention and Control of Gene Regulatory Networks: Theoretical Framework and Application to Human Melanoma Gene Regulation," F. Emmert-Streib, and M. Dehmer, Matthias (eds.), *Statistical Diagnostics for Cancer: Analyzing High-Dimensional Data*. Wiley-VCH, Quantitative and Network Biology, 2013.

[12]   S. Friedland, Q. Li, D. Schonfeld, and E. A. Bernal, "Two algorithms for compressed sensing of sparse tensors," Boche H., Calderbank R., Kutyniok G., Vybíral J. (eds.), *Compressed Sensing and its Applications*. Springer-Verlag, pp. 259-281, 2015.

[13]   I. Fortel, M. Butler, L. E. Korthauer, L. Zhan, O. Ajilore, I. Driscoll, A. Sidiropoulos, Y. Zhang, L. Guo, H. Huang, D. Schonfeld, and A. Leow, "Brain dynamics through the lens of statistical mechanics by unifying structure and function," *Medical Image Computing and Computer-Assisted Intervention – MICCAI, Lecture Notes in Computer Science 11768*. (D. Shen et al., Eds.). Springer Nature Switzerland AG, pp. 503-511, 2019.

L.4. Journal Editorials

[1]   D. Schonfeld, J. Goutsias, I. Shmulevich, I. Tabus, and A.H. Tewfik, "Introduction to the issue on genomic and proteomic signal processing," *IEEE Journal of Selected Topics in Signal Processing*, Special Issue on Genomic and Proteomic Signal Processing, vol. 2, pp. 257-260, 2008.

[2]   S.-F. Chang, J. Luo, S. Maybank, D. Schonfeld, and D. Xu, "An Introduction to the special issue on event analysis in videos," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 18, pp. 1469-1472, 2008.

[3]   D. Schonfeld, "Perspectives on special issues," *IEEE Signal Processing Magazine*, vol. 26, issue 5, 2009.

[4]   D. Schonfeld, "The evolution of signal processing," *IEEE Signal Processing Magazine*, vol. 27, issue 5, 2010.

[5]   R. Chellappa, W. Heinzelman, J. Konrad, D. Schonfeld, and M. Wolf, "Introduction to Special Section on Distributed Camera Networks: Sensing, Processing, Communication, and Implementation," Special Section on Distributed Camera Networks: Sensing, Processing,

Communication, and Implementation, *IEEE Transactions on Image Processing*, vol. 19, pp. 2513-2515, 2010.

[6]   D. Schonfeld, J. Biemond, G. de Haan, and A. Kaup, "Introduction to the issue on recent advances in video processing for consumer displays," *IEEE Journal of Selected Topics in Signal Processing*, Special Issue on Recent Advances in Video Processing for Consumer Displays, vol. 5, pp. 213-216, 2011.

[7]   L. Di Stefano, C. Regazzoni, and D. Schonfeld, "Advanced Video-Based Surveillance," EURASIP Journal on Image and Video Processing, Special Issue on Advanced Video-Based Surveillance, Volume 2011, Article ID 857084, 2 pages, 2011.

[8]   D. Schonfeld and D. Li, "Signal Processing Trends in Media, Mobility, and Search," *IEEE Signal Processing Magazine*, vol. 28, issue 4, 2011.

[9]   L. Najman, J. Barrera, B. S. D. Sagar, P. Maragos, and D. Schonfeld, "Introduction to the issue on filtering and segmentation with mathematical morphology," *IEEE Journal of Selected Topics in Signal Processing*, vol. 6, pp. 737-738, 2012.

[10] D. Schonfeld, "Editor-in-chief message," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 24, pp. 181-182, 2014.

[11] D. Schonfeld, "Editor-in-chief message," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 25, p. 181, 2015.

L.5. Refereed Journal Papers

[1]   D. Schonfeld and J. Goutsias, "Optimal morphological pattern restoration from noisy binary images," *IEEE Transactions on Pattern Analysis and Machine Intelligence,* vol. 13, pp. 14-29, 1991.

[2]   D. Schonfeld and J. Goutsias, "On the morphological representation of binary images in a noisy environment," *Journal of Visual Communication and Image Representation,* vol. 2, pp. 17-30, 1991.

[3]   J. Goutsias and D. Schonfeld, "Morphological representation of discrete and binary images," *IEEE Transactions on Signal Processing,* vol. 39, pp. 1369-1379, 1991.

[4]   D. Schonfeld, "On the hysteresis and robustness of Hopfield neural networks," *IEEE Transactions on Circuits and Systems---II: Analog and Digital Signal Processing,* vol. 40, pp. 745-748, 1993.

[5]   D. Schonfeld, "Optimal structuring elements for the morphological pattern restoration of binary images," *IEEE Transactions on Pattern Analysis and Machine Intelligence,* vol. 16, pp. 589-601, 1994.

[6]   M. Charif-Chefchaouni and D. Schonfeld, "Morphological representation of nonlinear filters," *Journal of Mathematical Imaging and Vision,* vol. 4, pp. 215-232, 1994.

[7]   B. Kisacanin and D. Schonfeld, "A fast thresholded linear convolution representation of morphological operations," *IEEE Transactions on Image Processing,* vol. 3, pp. 455-457, 1994.

[8] M. Charif-Chefchaouni and D. Schonfeld, "On the invertibility of the morphological representation of binary images," *IEEE Transactions on Image Processing,* vol. 3, pp. 847-849, 1994.

[9] M. Charif-Chefchaouni and D. Schonfeld, "Morphological representation of order-statistics filters," *IEEE Transactions on Image Processing,* vol. 4, pp. 838-845, 1995.

[10] M. Charif-Chefchaouni and D. Schonfeld, "On the convergence and roots of order-statistics filters," *IEEE Transactions on Signal Processing,* vol. 43, pp. 1990-1993, 1995.

[11] B.K. Jang, R.T. Chin, M. Charif-Chefchaouni, and D. Schonfeld, "Comments on the invertibility of the morphological representation," *IEEE Transactions on Image Processing,* vol. 5, pp. 529-532, 1996.

[12] A. Abu-Naser, N.P. Galatsanos, M.N. Wernick and D. Schonfeld, "Object recognition based on impulse restoration with use of the expectation-maximization algorithm," *Journal of the Optical Society of America A: Optics, Image Science, and Vision,* vol. 15, pp. 2327-2340, 1998.

[13] K.A. Matkowskyj, D. Schonfeld, and R.V. Benya, "Quantitative immunohistochemistry by measuring cumulative signal strength using commercially available software Photoshop and Matlab," *The Journal of Histochemistry & Cytochemistry*, vol. 48(2), pp. 303-311, 2000.

[14] D. Schonfeld, "On the relation of order-statistics filters and template matching," *IEEE Transactions on Image Processing,* vol. 9, pp. 945-949, 2000.

[15] D. Schonfeld and D. Lelescu, "VORTEX: Video retrieval and tracking from compressed multimedia databases—multiple object tracking from MPEG-2 bitstream," (**Invited Paper**). *Journal of Visual Communication and Image Representation*, Special Issue on Multimedia Database Management, vol. 11, pp. 154-182, 2000.

[16] D. Lelescu and D. Schonfeld, "Statistical sequential analysis for real-time scene change detection on compressed multimedia bitstream," *IEEE Transactions on Multimedia*, vol. 5, pp. 106-117, 2003.

[17] V. Pavlovic, D. Schonfeld, and G. Friedman, "Stochastic noise process enhancement of Hopfield neural networks," *IEEE Transactions on Circuits and Systems*, vol. 52, no. 4, pp. 213-217, 2005.

[18] N. Bouaynaya and D. Schonfeld, "Motion-based particle filtering for head tracking applications," (**Invited Paper**). *Electronic Imaging Newsletter*, vol. 15, no. 2, p. 8, 2005.

[19] N. Balakrishnan, K. Hariharakrishnan, and D. Schonfeld, "A new image representation algorithm inspired by image submodality models, redundancy reduction, and learning in biological vision," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 27, no. 9, pp. 1367-1378, 2005.

[20] K. Hariharakrishnan and D. Schonfeld, "Fast object tracking using adaptive block matching," *IEEE Transactions on Multimedia*, vol. 7, no. 5, pp. 853-859, 2005.

[21] B. Cavusoglu, D. Schonfeld, R. Ansari, and D.K. Bal, "Real-time low-complexity adaptive approach for enhanced QoS and error resilience in MPEG-2 video transport over RTP networks," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 15, no. 12, pp. 1604-1614, 2005.

[22] D. Schonfeld and G. Friedman, "On the optimality of hysteresis in signal processing and communication systems," *The Journal of the Franklin Institute,* vol. 342, pp. 749-759, 2005.

[23] S. Balam and D. Schonfeld, "Associative processors for video coding applications," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 16, pp. 241-250, 2006.

[24] F.I. Bashir, A.A. Khokhar, and D. Schonfeld, "Real-time affine-invariant motion trajectory-based retrieval and classification of video sequences from arbitrary camera view," *ACM Multimedia Systems Journal*, Special Issue on Machine Learning Approaches to Multimedia Information Retrieval, vol. 12, pp. 45-54, 2006.

[25] D. Schonfeld and N. Bouaynaya, "A new method for multidimensional optimization and its application in image and video processing," *IEEE Signal Processing Letters*, vol. 13, pp. 485-488, 2006.

[26] N. Bouaynaya, M. Charif-Chefchaouni and D. Schonfeld, "Spatially-Variant Morphological Restoration and Skeleton Representation," *IEEE Transactions on Image Processing*, vol. 15, pp. 3579-3591, 2006.

[27] F.I. Bashir, A.A. Khokhar, and D. Schonfeld, "Real-time motion trajectory-based indexing and retrieval of video sequences," *IEEE Transactions on Multimedia*, vol. 9, pp. 58-65, 2007.

[28] W. Qu, D. Schonfeld, and M. Mohamed, "Distributed Bayesian multiple target tracking in crowded environments using multiple collaborative cameras," *EURASIP Journal on Applied Signal Processing*, Special Issue on Tracking in Video Sequences of Crowded Scenes, pp. 21-36, 2007.

[29] W. Qu, D. Schonfeld, and M. Mohamed, "Real-time distributed multi-object tracking using multiple interactive trackers and a magnetic-inertia potential model," *IEEE Transactions on Multimedia*, vol. 9, pp. 511-519, 2007.

[30] F.I. Bashir, A.A. Khokhar, and D. Schonfeld, "Object trajectory-based activity classification and recognition using hidden Markov models," *IEEE Transactions on Image Processing*, vol. 16, pp. 1912-1919, 2007.

[31] N. Bouaynaya and D. Schonfeld, "Protein communication system: Evolution and genomic structure," *Algorithmica,* Special issue on Algorithmic Methodologies for Processing Protein Structures, Sequences and Networks, vol. 48, pp. 375-397, 2007.

[32] W. Qu and D. Schonfeld, "Real-time decentralized articulated motion analysis and object tracking from videos," *IEEE Transactions on Image Processing*, vol. 16, pp. 2129-2138, 2007.

[33] S. Liao, M. Dutta, D. Schonfeld, T. Yamanaka and M.A. Stroscio, "Quantum dot blinking: relevance to physical limits for nanoscale optoelectronic device," *Journal of Computational Electronics*, 2008.

[34] P. Pan and D. Schonfeld, "Image reconstruction and multi-dimensional field estimation from randomly scattered sensors," *IEEE Transactions on Image Processing*, vol. 17, pp. 94-99, 2008.

[35] N. Bouaynaya, M. Charif-Chefchaouni and D. Schonfeld, "Theoretical foundations of spatially-variant mathematical morphology – Part I: Binary images," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 30, pp. 823-836, 2008.

40

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M. KEYNOTE AND PLENARY TALKS

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Rabat, Morocco
1995

VORTEX: Video Retrieval and Tracking from Compressed Multimedia Databases
INPT/ASME International Conference on Communications, Signals and Systems
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2001

MotionSearch: Content-Based Video Retrieval and Activity Recognition in Video Surveillance
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Genoa, Italy
2009

Distributed Multi-Camera Networks: Graphical Models, Tensor Representation, and Plenoptic Functions
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Chicago, Illinois
2010

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IEEE/IET International Conference on Audio, Language and Image Processing (ICALIP)
Shanghai, China
2010

The Visual Brain: Biologically-Inspired Imaging and Vision
International Conference on Intelligent Control and Information Processing (ICICIP)

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International Conference on Brain Inspired Cognitive Systems (BICS)
Beijing, China
2013

Distributed Multi-Camera Networks: Graphs, Grammars, and Tensors
International Conference on Wireless Communications and Signal Processing (WCSP)
Yangzhou, China
2016

University of Illinois – New Oriental Artificial Intelligence Research Laboratory
N-Brain Alliance Launch & Product Release Conference
New Oriental AI Research Academy
Beijing, China
2018

AI Technology in Education and Academic Thinking
Think for Education Conference (TEC) AI+Education
Beijing, China
2018

Advances in Deep Learning: Theory and Applications
IEEE International Conference on Computer, Electrical and Communication Engineering (ICCECE)
Kulkata, India
2023

N. INVITED SEMINARS

Optimal morphological representation and detection of binary images
Department of Electrical Engineering and Computer Science
Northeastern University
Boston, Massachusetts
1990

Optimal morphological representation and detection of binary images
The Johns Hopkins University
Applied Physics Laboratory
Laural, Maryland
1990

Optimal morphological representation and detection of binary images
Center for Automation Research
University of Maryland
College Park, Maryland
1990

Optimal morphological representation and restoration of binary images: Theory and applications
Department of Electrical and Computer Engineering
Illinois Institute of Technology

Chicago, Illinois
1990

Optimal morphological representation and restoration of binary images: Theory and applications
Department of Electrical and Computer Engineering
University of California
Santa Barbara, California
1990

Optimal morphological representation and restoration of binary images: Theory and applications
Department of Electrical Engineering and Computer Science
Northwestern University
Evanston, Illinois
1991

Morphological image processing and analysis: Theory and applications
Department of Electrical and Computer Engineering
University of Illinois
Urbana-Champaign, Illinois
1992

Morphological image representation: Theory and applications
DOD Tri-Service Workshop on Stochastic Methods in Image Analysis
U.S. Army Harry Diamond Laboratories
Adelphi, Maryland
1992

Morphological representation of nonlinear filters: Theory and applications
Department of Electrical and Computer Engineering
Illinois Institute of Technology
Chicago, Illinois
1993

Morphological image representation: Theory and applications
ONR Workshop on Vision and Optical Information Processing
Arlington, Virginia
1994

Nonlinear Signal and Image Processing
Department of Electrical Engineering and Computer Science
University of Illinois
Chicago, Illinois
1996

Nonlinear Operators: Theory and Application to Image Processing and Communications
School of Electrical and Computer Engineering
Technion – Israel Institute of Technology
Haifa, Israel
1996

Stochastic Noise Process Enhancement of Nonlinear Filtering
Department of Electrical Engineering
Northern Illinois University
DeKalb, Illinois
1996

Morphological Signal and Image Processing: Theory and Applications
Department of Electrical Engineering—Systems
University of Tel-Aviv
Tel-Aviv, Israel
1997

VORTEX: Video Retrieval and Tracking from Compressed Multimedia Databases
Department of Electrical and Computer Engineering
Illinois Institute of Technology
Chicago, Illinois
2001

Mathematical Morphology and Computer Vision
University of Illinois at Chicago
Chicago, Illinois
2002

VORTEX: Video Retrieval and Tracking from Compressed Multimedia Databases
Department of Electrical and Computer Engineering
Drexel University
Philadelphia, Pennsylvania
2002

**Time-Series Analysis Based on Statistical Signal Processing:
Segmentation, Prediction, and Tracking**
Global Electronic Trading Company (Getco)
Chicago, Illinois
2004

Particle Filtering for Head Tracking in Wireless Communications
Motorola Research Labs
Schaumburg, Illinois
2004

Real-Time Video Communications: Compression, Tracking, Retrieval, and Networking
University of Illinois
Chicago, Illinois
2005

Real-Time Video Tracking and Retrieval from Multimedia Databases
Motorola Research Labs
Schaumburg, Illinois
2005

Real-Time Multiple Object Tracking and Motion Trajectory-Based Video Databases: Indexing, Retrieval, and Activity Recognition
Hewlett-Packard Research Labs
Haifa, Israel
2005

Real-Time Video Tracking Based on Particle Filtering
University of Illinois
Chicago, Illinois
2005

Real-Time Collaborative Distributed Tracking and Trajectory Analysis from Multiple Camera and Sensor Networks
School of Electrical and Computer Engineering
Purdue University
West Lafayette, Indiana
2005

A New Method for Multidimensional Optimization and Its Application in Image and Video Processing
Department of Electrical Engineering and Computer Science
Northwestern University
Evanston, Illinois
2006

Protein Communication System: Evolution and Genomic Structure
Department of Electrical and Computer Engineering
University of Illinois at Urbana-Champaign
Urbana-Champaign, Illinois
2006

Protein Communication System: Evolution and Genomic Structure
Bioinformatics Group
Mathematics and Computer Science Division
Argonne National Laboratory
Argonne, Illinois
2006

Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models
College of Information Science and Engineering
Graduate School
Chinese Academy of Science
Beijing, P.R. China
2007

Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models
Visual Computing Group
Microsoft Research Asia
Beijing, P.R. China

2007

Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models
School of Electronic and Information Institute
Tongji University
Shanghai, P.R. China
2007

Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models
School of Automation
Institute of Automation
Hangzhou Dianzi University
Hangzhou, P.R. China
2007

Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models
Department of Information Science and Electronic Engineering
Institute of Information and Communication Systems
Zhejiang University
Hangzhou, P.R. China
2007

IneractiveVision: Distributed Image and Video Processing
Intellectual Property Technical Lecture Series
McAndrews, Held & Malloy, Ltd.
Chicago, Illinois
2007

Distributed Image and Video Processing:
Directed Graphs, Bayesian Estimation, and Hidden Markov Models
Departments of Computer Science and Electrical & Computer Engineering
Technion, Israel Institute of Technology
Haifa, Israel
2007

MotionSearch: Content-Based Video Retrieval and Classification
Joint Chapters of the IEEE
Rochester, New York
2008

Evolution and Genomic Structure: A Signal Processing Perspective
Bioinformatics Cluster
University of Rochester
Rochester, New York
2008

Evolution and Genomic Structure: A Signal Processing Perspective
Department of Electrical Engineering

65

Columbia University
New York, New York
2008

Evolution and Genomic Structure: A Signal Processing Perspective
Department of Electrical Engineering and Computer Science
Northwestern University
Evanston, Illinois
2008

MotionSearch: Content-Based Video Retrieval and Classification
Distinguished Speaker in the Joint College Colloquium Series
College of Engineering and Information Technology and College of Science and Mathematics
Department of Applied Science
University of Arkansas at Little Rock
Little Rock, Arkansas
2008

Evolution and Genomic Structure: A Signal Processing Perspective
Department of Electrical and Computer Engineering
University of Wisconsin – Madison
Madison, Wisconsin
2008

MotionSearch: Content-Based Video Retrieval and Classification
Department of Electrical & Computer Engineering
Tufts University
Medford, Massachusetts
2009

MotionSearch: Content-Based Video Retrieval and Classification
Department of Electrical & Microelectronics Engineering
Rochester Institute of Technology
Rochester, New York
2009

MotionSearch: Content-Based Video Retrieval and Classification
School of Computer Engineering
Nanyang Technological University
Singapore
2009

Distributed Multi-Camera Networks: Graphical Models, Tensor Representation, and Plenoptic Functions
Department of Electrical and Computer Engineering
Illinois Institute of Technology
Chicago, Illinois
2010

Personalized Visual Interaction: Robust Video-Conferencing and Human-Computer Interaction Using a Two-Camera Computer System

66

Qualcomm Corp.
San Diego, California
2010

Evolution and Genomic Structure: A Signal Processing Perspective
Department of Information Engineering and Computer Science - DISI
Microsoft Research-University of Trento Centre for Computational and Systems Biology
University of Trento
Trento, Italy
2010

**A Novel Cache Optimization Algorithm and Video Streaming Protocol
for Pure Peer-to-Peer Networks**
Motorola Research Labs
Schaumburg, Illinois
2010

**Distributed Multi-Camera Networks: Graphical Models, Tensor Representation,
and Plenoptic Functions**
Research Center or Automation
Northeastern University
Shenyang, P.R. China
2010

**Distributed Multi-Camera Networks: Graphical Models, Tensor Representation,
and Plenoptic Functions**
School of Automation and Electric Engineering
Zhejiang University of Science and Technology
Hangzhou, P.R. China
2010

**Distributed Multi-Camera Networks: Graphical Models, Tensor Representation,
and Plenoptic Functions**
Center for OPTical IMagery Analysis and Learning (OPTIMAL)
State Key Laboratory of Transient Optics and Photonics
Xi'an Institute of Optics and Precision Mechanics
Chinese Academy of Sciences
Xi'an, P.R. China
2010

Distributed Multi-Camera Networks: Graphs, Grammars, and Tensors
Dean's Leadership in Innovation Seminar Series
Advanced Analytics Institute (AAI)
University of Technology
Sydney, Australia
2012

Genomic Signal Processing: Evolution, Structure, and Regulation
Dean's Leadership in Innovation Seminar Series
Advanced Analytics Institute (AAI)
University of Technology

Sydney, Australia
2012

Distributed Multi-Camera Networks: Theory and Applications
Harbin Engineering University (HEU)
Harbin, China
2014

Distributed Multi-Camera Networks: Theory and Applications
Electrical and Computer Engineering Graduate Program
Ryerson University
Toronto, Canada
2014

Genomic Signal Processing: Evolution, Structure, and Regulation
Distinguished Lecturer Seminar Series
Electrical Engineering Department
The Pennsylvania State University
University Park, Pennsylvania
2015

Genomic Signal Processing: Evolution, Structure, and Regulation
School of Electrical & Electronic Engineering
Nanyang Technological University
Singapore
2015

O. GRADUATE STUDENTS AND VISTING SCHOLARS

O.1. Visiting Scholars

Mohammed Charif-Chefchaouni
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1995
Position: Director and Professor, National Institute of Postes and Telecommunications, Morocco.

Yuesong Lin
Department of Electrical and Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2007
Position: Professor, Institute of Information and Control, Hangzhou Dianzi University, Hangzhou, P.R. China.

Haihong Chi
Department of Electrical and Computer Engineering

University of Illinois at Chicago
Chicago, Illinois
2010
Position: Associate Professor, College of Automation, Harbin Engineering University (HEU), Harbin, P.R. China.

Claudio Piciarelli
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
2010
Position: Postdoctoral Fellow, Department of Mathematics and Computer Science, University of Udine, Udine, Italy.

O.2. Postdoctoral Fellows

Mohammed Charif-Chefchaouni
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1994
Position: Director and Professor, National Institute of Postes and Telecommunications, Morocco.

O.3. Visiting Students

Alessio Dore
Department of Electrical and Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2008
Former Position: Doctoral Candidate, DIBE - Department of Biophysical and Electronic Engineering, University of Genova, Genoa, Italy.
Current Position: Postdoctoral Fellow, Imaging Sciences Centre, Institute of Biomedical Engineering, Imperial College, London, United Kingdom.

Yunmei Gong
Department of Electrical and Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2008-09
Current Position: Doctoral Candidate, Information and Communication Engineering, College of Electronics and Information Engineering, Tongji University, Shanghai, P.R. China.

Nicola Piotto
Department of Electrical and Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2010

Current Position: Doctoral Candidate, Department of Engineering and Computer Science – DISI, Multimedia Signal Processing and Understanding Lab – MMLab, University of Trento, Trento, Italy.

O.4. Doctoral Students

Mohammed Charif-Chefchaouni
"Morphological Representation of Nonlinear Filters: Theory and Applications"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1993
Former Position: Professor, National Institute of Postes and Telecommunications, Rabat, Morocco.
Current Position: Director, National Institute of Postes and Telecommunications, Rabat, Morocco.

Dan Lelescu
"VORTEX: Video Retrieval and Tracking from Compressed Multimedia Databases"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
2000
Former Position(s): Senior Research Scientist, Lead of Algorithms Group, Compression Sciences, Campbell, California, USA; Senior Researcher, NTT DoCoMo Communications Laboratories USA, San Jose, California, USA; Principal Scientist, Advanced Imaging Research & Development Laboratory, Micron Technology, California, USA; Chief Scientist, Pelican Imaging Corporation, Mountain View, California, USA; Chief Scientist, Emergent VR, Campbell, California, USA.
Current Position: Engineer, Apple, Cupertino, California, USA.

Bulent Cavusoglu
"Real-Time Content-Based Video Communications over Heterogeneous Networks"
(Jointly Supervised with Prof. Rashid Ansari)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2005
Current Position: Professor, Ataturk University, Erzurum, Turkey.

Faisal Bashir
"MotionSearch: Object Motion Trajectory-Based Video Search and Classification System"
(Jointly Supervised with Prof. Ashfaq Khokhar)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2006
Internship: Mitsubishi Electric Research Laboratory (MERL), USA.
Former Position(s): Intern, Mitsubishi Electric Research Laboratory (MERL), Cambridge, Massachusetts, USA; Senior Imaging Scientist, Retica Systems, Inc., Waltham, Massachusetts, USA; Senior Vision Engineer, Heartland Robotics, Cambridge, Massachusetts, USA.
Current Position: Senior Principal Engineer – Advanced Development Group, Security and Detection Systems, L-3 Communications, Woburn, Massachusetts, USA.

Wei Qu
"Real-Time Distributed Video Tracking of Multiple Objects from Single and Multiple Cameras"
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2006
Internship: Mitsubishi Electric Research Laboratory (MERL), USA; Siemens Medical Systems, USA.
Former Position(s): Senior Research Scientist, Motorola Research Labs, Schaumburg, Illinois, USA; Senior Scientist, Siemens Medical Solutions USA, Hoffman Estates, Illinois, USA; Associate Professor, Graduate University of Chinese Academy of Sciences, Beijing, China; CEO Special Assistant, Director of Technology, President of CSST Research, Hong Kong; Vice President, R&D, Special Assistant to CEO, President of Beijing Research Institute, Beijing, China; Co-Founder, SmartVision Technology, Beijing, China.
Current Position: President, Artificial Intelligence Research Institute, New Oriental Education & Technology Group Inc., Beijing, China.

Nidhal Bouaynaya
"Analysis of Proteomics and Genomics Based on Signal Processing and Communication Theory"
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2007
Former Position: Assistant Professor, Department of Systems Engineering, University of Arkansas at Little Rock, Little Rock, Arkansas, USA.
Current Position: Associate Dean for Research & Graduate Studies, Rowan University, Glassboro, New Jersey, USA.

Hunsop Hong
Constrained and Hierarchical Density Estimation for Image Reconstruction and Sensor Networks
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2008
Current Position: Senior Research Engineer, Samsung Information Systems America, Irvine, California, USA.

Pan Pan
Video Tracking Based on Particle Filters: Particle Allocation, Graphical Models, and Performance Evaluation
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2009
Internship: NTT Research Laboratory, Japan; Mitsubishi Electric Research Laboratory (MERL), USA.
Former Position: Senior Researcher, Project Manager, Fujitsu Research and Development, Beijing, China.
Current Position: Technical Director, Alibaba Group, Beijing, China.

Xiang Ma
Motion Trajectory-Based Video Retrieval and Recognition: Tensor Analysis and Multi-Dimensional Hidden Markov Models

(Jointly Supervised with Prof. Ashfaq Khokhar)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2009
Internship: Knowledge Media Institute, Open University, United Kingdom; Siemens Medical Solutions USA, Hoffman Estates, Illinois, USA; Computer Vision Research Engineer, IntuVision, Inc., Woburn, Massachusetts, USA.
Former Position: Senior Research Scientist and Engineer, IntuVision, Inc., Woburn, Massachusetts, USA; Lead Engineer – 3D Maps & Reality Capture Processing, Nokia, Chicago, Illinois, USA; Research Manager, Manager of Engineering – Computer Vision, Artificial Intelligence R&D, HERE Technologies, Chicago, Illinois, USA.
Current Position: Applied Science Manager – Computer Vision and Artificial Intelligence, Amazon, Boston, Massachusetts, USA.

Junlan Yang
Virtual Video Enhancement for Handheld Mobile Cameras: Stabilization, Auto-Focus, and Super-Resolution
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2009
Internship: Ricoh Research Laboratory, Menlo Park, California, USA; Sharp Laboratories of America, USA.
Former Position: Senior Software Engineer, iKoa Corporation, Menlo Park, California, USA; Research Scientist, Marseille Networks, Santa Clara, California, USA.
Current Position: Software Engineer, Google LLC, Mountain View, California, USA.

Chong Chen
Multi-Camera Vision Systems: Distributed Pose Estimation and Plenoptic Imaging
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2009
Internship: Siemens Research Laboratory, USA; FX Palo Alto Laboratory (FXPAL), USA; Abbott Laboratories, USA.
Former Position: Senior Research Engineer, Samsung Information Systems America, Irvine, California, USA.
Current Position: Video Engineer, Apple, Cupertino, California, USA.

Xu Chen
Localization and Trajectory Estimation of Mobile Objects from a Single Sensor
(Jointly Supervised with Prof. Ashfaq Khokhar)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2010
Internship: Institute of Electrical Engineering, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; Kodak Research Laboratories, USA.
Former Position(s): Postdoctoral Fellow, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, Michigan, USA; Postdoctoral Fellow, Department of Electrical and

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Computer Engineering, Duke University, Durham, North Carolina, USA; Senior Researcher, Sharp Laboratories of America, Camas, Washington, USA.
Current Position: Senior Machine Learning Developer, SAS, Cary, North Carolina, USA.

Lei Gao
Compiler Optimization for Translating Software Binaries onto FPGAs
(Jointly Supervised with Prof. Prith Banerjee)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2010
Internship: Binachip, Inc., Chicago, Illinois, USA.
Former Position: Senior Engineer, Binachip, Inc., Chicago, Illinois, USA.
Current Position: Staff R&D Engineer, Synposis, Inc., Marlborough, Massachusetts, USA.

Liuling Gong
Machine Learning for Signal Processing:
Geometry, Kernels, and Symbolic Sequences
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2010
Internship: eBay Research Labs, USA.
Former Position: Postdoctoral Fellow, Center for the Study of Complex Systems, University of Michigan, Ann Arbor, Michigan, USA; Seismic Imager, CGGVeritas, Houston, Texas, USA; Data Scientist, GE Oil & Gas, Houston, Texas, USA.
Current Position: Data Scientist, Equinor, Houston, Texas, USA.

Songqing Zhao
Multiple Description Coding for Correlated Multi-Path Networks
(Jointly Supervised by Profs. Rashid Ansari and Daniela Tuninetti)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2010
Internship: Mitsubishi Electric Research Laboratory (MERL), USA.
Former Position: Voice and Data Quality Engineer, Voice & Data Quality and Performance Analysis Group, Alcatel-Lucent, Murray Hill, New Jersey, USA.
Current Position: Senior Wireless Engineer, Apple, Cupertino, California, USA.

Xiangqiong Shi
Bayesian Networks: Performance Analysis of Loopy Belief Propagation
(Jointly Supervised with Prof. Daniela Tuninetti)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2011
Internship: Motorola Research Labs, Schaumburg, Illinois, USA; Technicolor, Research & Innovation, Princeton, New Jersey, USA; Nokia Research Center, Palo Alto, California, USA.
Former Positions: Software Engineer, Volkswagen of America, Electronics Research Lab, Herndon, Virginia, USA; Software Engineer, Apple, Cupertino, California, USA.

Current Position: Software Engineer, Ouster, San Francisco, California, USA.

Liming Wang
Genomic Signal Processing and Regulatory Networks: Representation, Dynamics and Control
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2011
Former Position: Postdoctoral Fellow, Department of Electrical Engineering, Columbia University, New York, New York, USA; Postdoctoral Associate, Department of Electrical and Computer Engineering, Duke University, Durham, North Carolina, USA; Postdoctoral Associate, Department of Electrical and Computer Engineering, Ohio State University, Columbus, Ohio, USA.
Current Position: Lead Data Scientist, HERE Technologies, Chicago, Illinois, USA.

Jing Huang
Distributed Signal and Image Processing:
Particle Filters, Context Grammars, and Dynamic Games
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2013
Internship: Fuji Xerox Palo Alto Laboratory (FXPAL), Palo Alto, California, USA; Motorola Mobility, Applied Research Center, Libertyville, Illinois, USA; Nokia Research Center, Berkeley, California, USA.
Former Positions: Software Development Engineer, TeraRecon, Inc., Foster City, California, USA; Senior Deep Learning Software Engineer, Intel Artificial Intelligence, Intel Corporation, Santa Clara, California.
Current Position: Software Engineer, Microsoft Artificial Intelligence & Research, Bellevue, Washington, USA.

Qun Li
Multilinear Algebra in High-Order Data Analysis: Retrieval, Classification and Representation
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2013
Internship: Xerox Research Center, Xerox Innovations Group, Webster, New York, USA.
Former Positions: Research Scientist, Xerox Research Center, Xerox Innovations Group, Webster, New York, USA; Research Scientist, PARC, A Xerox Company, Palo Alto, California, USA.
Current Position: Senior Data Scientist, Microsoft, Bellevue, Washington, USA;

Johnson Jonaris GadElkarim Keiriz
From Micro to Macro: A Study of Human Brain Structure Based on Diffusion MRI and Neuronal Networks
(Jointly Supervised by Profs. Alex Leow and Richard Magin)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2013
Former Position: Postdoctoral Fellow, Department of Psychiatry, University of Illinois, Chicago, Illinois, USA; Lead Developer, nView medical Inc., Salt Lake City, Utah, USA; Research Scientist,

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Tamaggo, Montreal, Quebec, Canada; Research Scientist – Senior Software Engineer, Object Research Systems (ORS) Inc., Montreal, Quebec, Canada; Research Associate, Electronic Visualization Laboratory (EVL), University of Illinois at Chicago (UIC), Chicago, Illinois; USA.
Current Position: Principal CT Software Engineer, Canon Medical Research USA, Inc. Vernon Hills, Illinois, USA.

Lingdao Sha
When Sparsity Meets Graphs, Images, Structured and High-Dimensional Data
(Jointly Supervised with Prof. Jing Wang)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2018
Current Position: Senior Machine Learning Scientist, Tempus Labs, Inc., Chicago, Illinois, USA.

Haoyu Wang
Depth-constrained Feature-based Stitching System for Stereoscopic Panoramic Video Generation
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2019
Current Position: Computer Vision Engineer, Blackmagic Design, Colorado Springs, Colorado, USA.

Mehdi Sharifzadeh
Steganography and Steganalysis of Raw and Compressed Image Data
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2019
Internships: Software Engineering Intern, Google Brain, Mountain View, California, USA; Data Scientist Intern, Western Digital, Milpitas, California, USA; Data Scientist Intern, SanDisk, Milpitas, California, USA.
Previous Position: Research Engineer, Snap, Inc., Santa Monica, California, USA.
Current Position: Software Engineer, Google, Inc., Los Angeles, California, USA.

Chirag Agarwal
Robustness and Explainability of Deep Neural Networks: Architectures and Applications
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2020
Internships: Research Intern, Geisinger Health Systems, Danville, Pennsylvania, USA; Research and Development Intern, Kitware Inc., Clifton Park, New York, USA; Imaging Science Intern, Tempus Labs Inc., Chicago, Illinois, USA; Computer Vision / Augmented Reality Intern, Robert Bosch LLC, Farmington Hills, Michigan, USA.
Previous Position: Postdoctoral Research Fellow, Department of Computer Science, Department of Biomedical Informatics, and Business School, Harvard University, Cambridge, Massachusetts, USA.
Current Position: Research Scientist, Media and Data Science Research Laboratory, Adobe Research, Bangalore, India.

Mohammed Aloraini

Digital Media Forgery Detection
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2020
Current Position: Assistant Professor, Qassim University, Buraydah, Qassim, Saudi Arabia.

Igor Fortel
Excitation-Inhibition Balance: A Study of Brain Network Dynamics Using Statistical Mechanics
(Jointly Supervised by Prof. Alex Leow)
Video Steganography
Department of Biomedical Engineering
University of Illinois at Chicago
Chicago, Illinois
2021
Current Position: Systems Design Engineer, T-Mobile, Chicago, Illinois; Research Specialist, University of Illinois at Chicago, Chicago, Illinois.

O.5. Masters Thesis Students

Vladimir Pavlovic
"Stochastic Noise Process Enhancement of Hopfield Neural Networks"
(Jointly Supervised with Prof. Gary Friedman)
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1993
Position: Associate Professor, Department of Computer Science, Rutgers University, New Jersey, USA.

Deepak K. Bal
"Transmission of Real-Time MPEG-2 Video Over Differentiated Services Networks"
(Jointly Supervised with Prof. Rashid Ansari)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2003
Position: Takata, Inc., Michigan, USA.

Karthik Hariharakrishnan
"Visual Tracking: New Methods Using Adaptive Block Matching and Particle Filters"
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2003
Internship: NeoMagic Corp., USA.
Previous Position(s): National Instruments, India; Motorola, India; Senior Design Engineer, ARM, Ltd., United Kingdom.
Current Position: Staff Software Engineer, ARM, Ltd., United Kingdom.

Subhash Balam
"Associative Processors for Video Coding"
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2004
Position: Senior Staff Engineer/Manager, Qualcomm Corp., California, USA.

Emir Mulabegovic
"Lightweight Streaming Protocol for Real-Time Video Communications"
(Jointly Supervised with Prof. Rashid Ansari)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2005
Former Position: PCTEL, Illinois, USA.
Current Position: Systems Architect, Personal, Inc., Sarajevo, Bosnia and Herzegovina.

Andrea De Mauro
"A Peer-to-Peer Network for Real-Time Multiple-Description Video Communications
Using Multiple Paths"
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2006
Former Position: Financial Solutions Systems Analyst, Procter & Gamble, Newcastle, United Kingdom.
Current Position: Business Intelligence Manager, Procter & Gamble, Newcastle, Rome, Italy.

Claudio Rossi
"A Partially-Reliable Multihomed Transport Protocol for Real-Time Multiple-Description
Multimedia Traffic"
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2006
Position: Area Manager, IBM, Milan, Italy.

Amita Talati
Design and Evaluation of Data Compression and Decompression Applications on Field Programmable
Gate Arrays
(Jointly Supervised with Prof. Prith Banerjee)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2008
Former Position: Customer Applications Engineer, Newark Corporation, Cleveland, Ohio, USA.
Current Position: Senior Engineer, Newark Corporation, Cleveland, Ohio, USA.

Carlo Giulietti
A Novel Cache Optimization Algorithm and Protocol for Video Streaming in Pure Peer-to-Peer
Networks

Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2010
Position: Software Engineer, Astek, Sophia Antipolis, France.

Edmond Gjondrekaj
Clustering and Similarity Analyses of miRNA Assay by Means of Reprogrammable Devices
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2010

Alberto Mannari
Enhanced Frame Buffer Management for HEVC Encoders and Decoders
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2015
Position: Specialist Electronics Engineer, Teoresi Inc., Burr Ridge, Illinois.

Vasundhara Goyal[SEP]
Generation of Stereoscopic Video From Monocular Image Sequences Based on Epipolar Geometry
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2017

Akreem Talal Mohammed Saeed
Location Based Assistant on Android Platform
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2017

Lorenzo Norcini
Attention-Guided Mask Propagation for Video Object Segmentation
Department of Computer Science
University of Illinois at Chicago
Chicago, Illinois
2019
Position: Software Engineer, Amazon, Seattle, Washington.

Francesca Pistilli
GraphPointNet: Graph Convolutional Neural Network for Point Cloud Denoising
Department of Electrical & Computer Engineering
University of Illinois at Chicago
Chicago, Illinois
2019
Position: Doctoral Student, Politechnico di Torino, Turin, Italy.

O.6. Masters Project Students

Neil Zalut
"Linear Restoration of Medical Images: An Overview"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1993

Branislav Kisacanin
"A Fast Thresholded Linear Convolution Representation of Morphological Operations"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1993

Alan Baumgartner
"Morphological Segmentation of Computed Tomography Images"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1994

Alvin Ng
"Spatially-Variant Morphological Skeleton Representation"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1994

Smriti Anand
"Efficient Fast Reconstruction Algorithms in Computerized Tomography"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois, May 1995

Stephan W. Wegerich
"Subband Image Restoration and Blur Identification Using the EM Algorithm and Cross-Filtering"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1995

Robert Werckmeister
"Performance Analysis of Video Communications in Multimedia Networks"
(Jointly Supervised with Prof. Ouri Wolfson)
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1996

79

Margaret Kelton
"A Fast Method for Transform Conversion for Use in Image Processing"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1998

Kailash Ravishankar
"Frequency Prediction of High-Order Autoregressive Moving Average Sequences"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1998

Amir Yafe
"Transmission of MPEG-2 Streams Over Packet-Switched Networks"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1998

Steven J. Doering
"Digital Modulation: Applications to CDMA Communication Systems (IS-95)"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1999

Abhijit Bhattacharya
"MPEG-1 and H.263 Video Decoding on Motorola GSM Cellular Phone"
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
1999

Qin Cai
"Differentiated Transmission of MPEG-2 Video Bitstream Over Communication Networks"
(Jointly Supervised with Prof. Rashid Ansari)
Department of Electrical Engineering and Computer Science
University of Illinois at Chicago
Chicago, Illinois
2000

P. RESEARCH GRANTS

D. Schonfeld (PI)
"Morphological image representation: Theory and applications"
Office of Naval Research (ONR)

$150,000
1991-1995

S. Corson (PI) and D. Schonfeld (Co-PI)
"Parallel processing research"
University of Illinois
Campus Research Board (CRB)
$14,995
1994-1995

R. Ansari (PI), P. Hesketh (Co-PI), and D. Schonfeld (Co-PI)
"One-step process for instant ticket validation"
GTECH Corporation
$5,000
1997

D. Schonfeld (PI)
"National Communications Forum"
International Engineering Consortium (IEC)
$500
2000

D. Schonfeld (PI)
"Real-Time Very-Low Bit-Rate MPEG-4 Video Compression for Wireless Communication
Application"
Neomagic Corporation
$69,553
2001-2003

A. Khokhar (PI), R. Ansari (Co-PI), R. Grossman (Co-PI), D. Schonfeld (Co-PI), and C. Yu (Co-PI)
"High-Speed Terabyte Storage Server Based on Intelligent Disk Technology"
Army Research Office (ARO)
DURIP Program
$422,626
2002-2004

D. Schonfeld (PI)
"Computer Architectures for Real-Time Video Communications"
Neomagic Corporation
$76,075
2002-2004

M. Dutta (PI) et al.
"Design of a Super-Biological Eye Sensor System"
Defense Advanced Research Projects Agency (DARPA)
Army Research Office (ARO)
$200,000 (Seed Project)
2002-2003

D. Schonfeld (PI)
"OMAP Code Composure Studio Software for Real-Time Video Communications"

81

Texas Instruments, Inc.
DSP University Program
$4,500
2003

D. Schonfeld (PI)
"Real-Time Object Tracking of Video Sequences on Associative Processor Arrays"
Neomagic Corporation
$68,750
2003-2005

D. Schonfeld (PI)
"Real-Time Low-Power High-Quality Interactive Video Telephony
for Wireless Communication Applications"
Motorola, Inc.
$19,331
2004-2005

D. Schonfeld (PI)
"Real-Time Low-Power High-Quality Interactive Video Communications
for Video Animation and Stereography"
Motorola, Inc.
$22,000
2005-2006

D. Schonfeld (PI)
"Real-Time High-Quality Video Communications from Handheld Cameras
Using Video Stabilization and Auto-Focus"
Motorola, Inc.
$75,000
2005-2008

D. Schonfeld (PI)
"Interactive Video Communications Based on Stereographic Imaging
From a Single Camera"
Motorola, Inc.
$22,000
2006-2007

A. Khokhar (PI) and D. Schonfeld (Co-PI)
"MotionSearch: Motion Trajectory-Based Object Activity Retrieval and Recognition from Video
and Sensor Databases"
National Science Foundation (NSF)
$410,000
2006-2009

D. Schonfeld (PI)
"Real-Time Financial Forecasting Based on Statistical Signal Processing:
Correlation Analysis and Fast Algorithms"
Gelber Group
$66,522

2006-2007

D. Schonfeld (PI)
"Signal Communication and Processing in a RFID Sensor Network System"
Your Life Essentials
$4,000
2006-2008

D. Schonfeld (PI)
"MobilePlenoptics: Panoramic Video Communications in Mobile Devices"
Motorola, Inc.
$22,000
2007-2008

D. Schonfeld (PI)
"Machine Learning and Event Detection in Biological Systems"
VG Bioinformatics, Inc.
$40,000
2007-2008

A. Khokhar (PI) and D. Schonfeld (Co-PI)
"International Supplement to MotionSearch: Motion Trajectory-Based Object Activity Retrieval and Recognition from Video and Sensor Databases"
National Science Foundation (NSF)
$37,468
2007-2008

D. Schonfeld (PI)
"InteractiveVision: Collaborative Multiple-Input-Multiple-Output Inverse Problems with Application in Image and Video Processing"
National Science Foundation (NSF)
$232,496
2007-2010

A. Khokhar (PI) and D. Schonfeld (Co-PI)
"Research Experiences for Undergraduates (REU) Supplement to MotionSearch: Motion Trajectory-Based Object Activity Retrieval and Recognition from Video and Sensor Databases"
National Science Foundation (NSF)
$12,000
2008-2009

D. Schonfeld (PI)
"Real-time Superresolution for Enhanced Video Streaming"
iKoa Corporation
$25,000
2008-2009

D. Schonfeld (PI)
"Tracking Performance Evaluation based on a Reflective Model and Perturbation Analysis"
Mitsubishi Electric Research Laboratories (MERL)
$1,228

2009

R. Magin (PI), M. Ragozzino (Co-PI), K. Rockne (Co-PI), T. Royston (Co-PI), and D. Schonfeld (Co-PI)
"Acquisition of a High Field Magnetic Resonance Imaging System for Science and Engineering Research"
National Science Foundation (NSF)
$1,995,000
2009

D. Schonfeld (PI), N. Bouaynaya (Key/Senior Personnel), and H.M. Fathallah-Shaykh (Key/Senior Personnel)
"Minimal-Perturbation Dynamic Control of the Melanoma Gene Regulatory Network" (R01)
National Institutes of Health (NIH)
$1,200,000
2010-2015

X. Joe Zhou (PI), D. Schonfeld (Co-PI), H. Engelhard (Co-PI), R. Magin (Co-PI), and T. Valyi Nagy (Co-PI)
"Probing Intra-voxel Tissue Heterogeneity Using MRI" (R01)
National Institutes of Health (NIH)
NIH R01EB026716-01
$2,173,399
2018-2023

D. Schonfeld (PI)*
"University of Illinois - New Oriental Artificial Intelligence Research Laboratory (UINO-AIRL)"
New Oriental Education & Technology Group Inc.
$1,600,425
2019-2024
* Funding was approved by the research sponsor but declined by the university because of potential conflict with export controls.

Q. ADMINISTRATIVE ACTIVITIES

Q.1. Administrative Positions

Director
University-Industry Engineering Research Center (UIERC)
College of Engineering
University of Illinois at Chicago
2008—2011

Supervisor
Web Development
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2001—2002

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Director
Timetable Schedule
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1999—2000

Q.2. University Committees

Co-Chair
University All-Campus Promotion and Tenure Committee
University of Illinois at Chicago
2010—2011

Member
Graduate College Executive Committee
University of Illinois at Chicago
2020—2022

Member
COVID-19 Relief Fund Application Review Committee
University of Illinois at Chicago
2022

Member
Dean Review Committee
University of Illinois at Chicago
2017—2018

Member
Graduate Mentor Award Committee
University of Illinois at Chicago
2014—2016

Member
Chancellor's Graduate Research Fellowship Program
University of Illinois at Chicago
2014—2016

Member
University Vision and Strategy
University of Illinois at Chicago
2012—Present

Member
University Ad-Hoc Advisory Committee for the Office of Faculty Affairs
University of Illinois at Chicago
2012—2013

Member

85

University Task Force to Review Non-Tenure Promotion Guidelines
University of Illinois at Chicago
2011—2012

Member
University Promotion and Tenure Norms and Criteria Committee
University of Illinois at Chicago
2011—2012

Member
University Honorary Degree Nominating Committee
University of Illinois at Chicago
2010—2011

Member
University Promotion and Tenure Seminar Panel
Natural Science, Health Science, and Engineering
University of Illinois at Chicago
2010—2011

Member
University All-Campus Promotion and Tenure Committee
University of Illinois at Chicago
2008—2011

Member
University Campus Research Board Committee
University of Illinois at Chicago
2001—2004

Member
University Awards Committee
University of Illinois at Chicago
1998—2001

Member
Student Appeals Board
University of Illinois at Chicago
2004—2005

Q.3. College Committees

Member
College Executive Committee
College of Engineering
University of Illinois at Chicago
2009-2012, 2015-2017; 2019-2020

Member
Dean of the College of Engineering Search Committee

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College of Engineering
University of Illinois at Chicago
2007-2008

Member
Wexler Chair in Information Technology Search Committee
College of Engineering
University of Illinois at Chicago
2006

Member
Advisory Committee for Bioinformatics Program in Bioengineering
University of Illinois at Chicago
2000—2010

Chair
Networking Curriculum Subcommittee
College of Engineering
University of Illinois at Chicago
2005

Member
Departmental Reorganization and Formation Committee
College of Engineering
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1999—2000

Q.4. Departmental Committees

Mentoring Coordinator
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2021—Present

Chair
Departmental Faculty Search Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2006-2008; 2010-2011; 2016-2017

Chair
Departmental Grievance Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2013—2019

Chair
Departmental Research & Colloquium Committee
Department of Electrical Engineering & Computer Science

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University of Illinois at Chicago
1996—1998; 2003—2004

Chair
Departmental Seminar Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2008—2010

Chair
Departmental Web Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2001—2003

Chair
Departmental Web & Computer Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2020-2021

Member
Department of Mathematics, Statistics, and Computer Science
Personnel Review Committee for Jing Wang
2020—2021

Member
Departmental Advisory Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1995—1996; 1998—1999; 2000—2002; 2004—2005; 2007—2010; 2015—2016

Member
Departmental Computer Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1990—1992; 2001—2004

Member
Departmental Computer & Web Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2013—2016

Member
Departmental Diversity & Inclusion Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2020—2021

Member

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Departmental Electronics Instructional Laboratory Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1997—1998

Member
Departmental Faculty Search Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1994—1995; 1998—2001; 2006—2008; 2010-2011; 2016—2017; 2021—Present

Member
Departmental Graduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1995—2000; 2011—2015

Member
Departmental Grievance Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2012—2021

Member
Departmental Promotion & Tenure Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1996—Present

Member
Departmental Research & Colloquium Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1992—1998; 2001—2004

Member
Departmental Scholarship Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1990—1996

Member
Departmental Scholarship & Awards Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2019—Present

Member
Departmental Seminar Committee
Department of Electrical & Computer Engineering

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University of Illinois at Chicago
2008—2013

Member
Departmental Undergraduate Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1998—2003; 2005—2011; 2015—2019

Member
Departmental Web Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2000—2011

Member
Departmental Web & Computer Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2019-2021

Q.5. Curriculum Committees

Chair
Departmental Communications and Networks Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2001—2002; 2004

Chair
Departmental Signal Processing Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2011

Member
Departmental Communications Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2011

Member
Departmental Communications and Networking Curriculum Subcommittee
of the Undergraduate and Graduate Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2001—2002; 2004

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Member
Departmental Computer Engineering Curriculum Subcommittee
of the Undergraduate and Graduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1998—2002

Member
Departmental Electrical Engineering Curriculum Subcommittee
of the Undergraduate and Graduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1996—2000

Member
Departmental Imaging Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1993

Member
Departmental Information and Computer Systems Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2011

Member
Departmental Masters of Engineering Program Subcommittee
of the Graduate Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2005

Member
Departmental Multimedia Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
2005

Member
Departmental Networking Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1999—2000; 2005

Member

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Departmental Signals and Systems Curriculum Subcommittee
of the Graduate Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2004

Member
Departmental Signal Processing Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2011

Member
Departmental Signal Processing and Communications Curriculum Subcommittee
of the Undergraduate and Graduate Committees
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1991

Member
Departmental Student Cheating Policy Subcommittee
of the Undergraduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1999

Member
Departmental Teaching Assistant Assignment Subcommittee
of the Undergraduate Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1996—1997

Member
Departmental Teaching Assistant Award Subcommittee
of the Scholarship Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1994

Q.6. Qualifier Committees

Chair
Departmental Communications Qualifier Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2003—2004; 2012

Chair

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Departmental Computer Communication Network Qualifier Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2002—2003; 2005

Chair
Departmental Signal Processing Qualifier Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1991—1995; 2001; 2002; 2008—2014, 2015—Present

Member
Departmental Communications Qualifier Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1997—2004; 2009—2014

Member
Departmental Computer Communications Networks Qualifier Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
2002—2005

Member
Departmental Computer Vision Qualifier Committee
Department of Electrical Engineering & Computer Science
University of Illinois at Chicago
1993—2001

Member
Departmental Signal Processing Qualifier Committee
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1991—2001; 2004—Present

Q.7. Research Laboratories and Centers

Director
University-Industry Engineering Research Center (UIERC)
College of Engineering
University of Illinois at Chicago
2008—2011

Co-Director
Multimedia Communications Laboratory (MCL)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1997—Present

Member

93

Departmental Signal and Image Research Laboratory (SIRL)
Department of Electrical & Computer Engineering
University of Illinois at Chicago
1991—2002

R. TEACHING ACTIVITIES

R.1. The Johns Hopkins University

ECE 137
Digital Signals and Systems
Fall 1987

ECE 137
Digital Signals and Systems
Fall 1988

ECE 137
Digital Signals and Systems
Fall 1989

R.2. University of Illinois at Chicago

EECS 212
Signal Processing
Fall 1990

EECS 212
Signal Processing
Winter 1991

EECS 416
Advanced Topics in Digital Signal Processing
Spring 1991

EECS 417
Digital Signal Processing
Fall 1991

EECS 554
Estimation Theory
Fall 1991

EECS 311
Communication Engineering
Spring 1992

EECS 554

Estimation Theory
Fall 1992

EECS / BioE 479
Real-Time Data Processing
Spring 1993

EECS / BioE 479
Real-Time Data Processing
Fall 1993

EECS 516
Optimal and Adaptive Digital Filters
Fall 1993

EECS 517
Image Processing
Spring 1994

EECS / BioE 479
Real-Time Data Processing
Fall 1994

EECS 517
Image Processing
Spring 1995

EECS 531
Detection and Estimation Theory
Spring 1995

EECS / BioE 479
Real-Time Data Processing
Fall 1995

EECS 517
Image Processing
Spring 1996

EECS 531
Detection and Estimation Theory
Spring 1996

EECS 530
Statistical Communication Theory
Fall 1996

EECS 517
Image Processing
Spring 1997

EECS / BioE 407
Pattern Recognition
Fall 1997

EECS 530
Statistical Communication Theory
Fall 1997

EECS / BioE 407
Pattern Recognition
Spring 1998

EECS 517
Image Processing
Spring 1998

EECS 517
Image Processing
Motorola Campus
Spring 1998

EECS 171
Introduction to Programming
Summer 1998

EECS 516
Optimal and Adaptive Digital Filters
Fall 1998

EECS 530
Statistical Communication Theory
Motorola Campus
Fall 1998

EECS 418
Digital Signal Processing II
Spring 1999

EECS 517
Image Processing
Spring 1999

EECS 531
Detection and Estimation Theory
Motorola Campus
Spring 1999

EECS 171
Introduction to Programming
Summer 1999

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EECS 417
Digital Signal Processing I
Fall 1999

EECS 491
Multimedia Communication Networks
Spring 2000

EECS 311
Communication Engineering
Summer 2000

EECS 491
Multimedia Communication Networks
Internet Course (Preparation)
Fall 2000

EECS 516
Optimal and Adaptive Digital Filters
Fall 2000

EECS 531
Detection and Estimation Theory
Fall 2000

EECS 491
Multimedia Communication Networks
Internet Course
Spring 2001

EECS 517
Image Processing
Spring 2001

EECS 171
Introduction to Programming
Summer 2001

ECE 516
Optimal and Adaptive Digital Filters
Fall 2001

ECE 531
Detection and Estimation Theory
Fall 2001

ECE 434
Multimedia Communication Networks
Internet Course
Spring 2002

ECE 517
Image Processing
Spring 2002

CS 102
Introduction to Programming
Summer 2002

ECE 433
Computer Communication Networks
Fall 2002

ECE 434
Multimedia Communication Networks
Fall 2002

ECE 333
Computer Communication Networks
Laboratory (Preparation)
Spring 2003

ECE 311
Communication Engineering
Fall 2003

ECE 434
Multimedia Communication Networks
Fall 2003

ECE 517
Image Processing
Spring 2004

ECE 434
Multimedia Communication Networks
Fall 2004

ECE 516
Optimal and Adaptive Digital Filters
Fall 2004

ECE 517
Image Processing
Spring 2005

ECE 311
Communication Engineering
Summer 2005

ECE 434
Multimedia Systems

Fall 2005

ECE 516
Optimal and Adaptive Digital Filters
Fall 2005

ECE 517
Image Processing
Spring 2006

ECE 311
Communication Engineering
Summer 2006

ECE 434
Multimedia Systems
Fall 2006

ECE 516
Optimal and Adaptive Digital Filters
Fall 2006

ECE 531
Detection and Estimation Theory
Spring 2007

ECE 311
Communication Engineering
Summer 2007

ECE 434
Multimedia Systems
Fall 2007

ECE 516
Optimal and Adaptive Digital Filters
Fall 2007

ECE 531
Detection and Estimation Theory
Spring 2008

ECE 434
Multimedia Systems
Fall 2008

ECE 516
Optimal and Adaptive Digital Filters
Fall 2008

ECE 530

Random Signal Analysis
Spring 2009

ECE 517
Image Processing
Fall 2009

ECE/BIOE 407
Pattern Recognition
Spring 2010

ECE 434
Multimedia Systems
Fall 2010

ECE 530
Random Signal Analysis
Spring 2011

ECE 434
Multimedia Systems
Fall 2011

ECE 530
Random Signal Analysis
Spring 2012

ECE 594
Machine Learning
Spring 2012

ECE 434
Multimedia Systems
Fall 2012

ECE 517
Image Processing
Fall 2012

ECE 530
Random Signal Analysis
Spring 2013

ECE 434
Multimedia Systems
Fall 2013

ECE 517
Image Processing
Fall 2013

ECE 434
Multimedia Systems
Fall 2014

ECE 517
Image Processing
Fall 2014

ECE 434
Multimedia Systems
Fall 2015

ECE 517
Image Processing
Fall 2015

ECE 434
Multimedia Systems
Fall 2015

ECE 517
Image Processing
Fall 2015

ECE 407
Patten Recognition
Spring 2016

ECE 530
Random Signal Analysis
Spring 2016

ECE 434
Multimedia Systems
Fall 2016

ECE 517
Image Processing
Fall 2016

ECE 407
Patten Recognition
Spring 2017

ECE 434
Multimedia Systems
Fall 2017

ECE 517
Image Processing
Fall 2017

ECE 517
Image Processing
Spring 2018

ECE 530
Random Signal Analysis
Spring 2018

ECE 434
Multimedia Systems
Fall 2018

ECE 517
Image Processing
Fall 2018

ECE 530
Random Signal Analysis
Spring 2019

ECE 434
Multimedia Systems
Fall 2019

ECE 517
Image Processing
Spring 2020

ECE 530
Random Signal Analysis
Spring 2020

ECE 434
Multimedia Systems
Fall 2020

ECE 530
Random Signal Analysis
Spring 2021

ECE 531
Detection and Estimation Theory
Spring 2021

ECE 434
Multimedia Systems
Fall 2021

ECE 517
Image Processing

102

Fall 2021

ECE 530
Random Signal Analysis
Spring 2022

ECE 531
Detection and Estimation Theory
Spring 2022

R.3. University of Trento

Content-Based Video Analysis: Tracking, Retrieval, and Classification
Information and Communication Technology (ICT) – International Doctoral School
Department of Information Engineering and Computer Science
University of Trento
May 2010

ATTACHMENT I

epsilon
economics

Thomas D. Vander Veen, Ph.D.
Managing Director

Epsilon Economics   Office: 312.637.2960
111 South Wacker Drive; 50th Floor
Chicago, Illinois 60606

tvanderveen@epsiloneconomics.com

Summary

Thomas Vander Veen specializes in the application of economics to intellectual property, international trade, and complex commercial disputes. Dr. Vander Veen has served as an economic expert in U.S. Courts, state courts and before the U.S. International Trade Commission.

His expertise includes valuation of intellectual property; evaluation of economic damages related to patent, copyright and trademark infringement, false advertising, breach of contract, and theft of trade secrets; and economic analysis in section 337 intellectual property matters before the U.S. International Trade Commission. Dr. Vander Veen's analysis of economic damages has included the development and analysis of consumer surveys. His intellectual property experience also includes the evaluation of commercial success of patented products, including in ANDA actions. He has studied market structure, competition, and performance of numerous pharmaceutical products, including pricing, marketing and promotion, and regulatory approval. He has performed economic analysis in numerous industries, including medical devices, pharmaceuticals, consumer retail products, consumer electronic devices, semiconductors, software and automotive products.

Dr. Vander Veen served as the principal economic advisor to a Commissioner, and subsequently the Chairman, of the U.S. International Trade Commission. He has taught economics and finance at Northwestern University and economics at Skidmore College. He served as the Chairman of the Board of Directors of the Chicago Youth Centers. He serves as a Governing Member of the Chicago Symphony Orchestra Association and on the boards of several academic and charitable institutions.

Education

- Ph.D. (Economics), Brown University, 1998

- M.A. (Economics), Brown University, 1992

- B.A. (Economics and Mathematics), Calvin College, 1990

Professional and Academic Experience

- Epsilon Economics
  Managing Director and Vice Chairman, 2022 – present
  Managing Director and President, 2015 – 2022

- Northwestern University – McCormick School of Engineering and Applied Science
  Adjunct Lecturer, 2016

- Navigant Economics
  Managing Director and Principal, 2013 – 2015
  Director and Principal, 2010 – 2013

- LECG, LLC
  Senior Managing Economist, 2006 – 2010

- Wheaton College
  Adjunct Instructor of Economics – 2009

- Charles River Associates, Inc. / CRA International, Inc. / InteCap, Inc.
  Associate Principal, 2005 – 2006
  Associate, 2003 – 2005

- U.S. International Trade Commission
  Economist and Advisor to Commissioner Stephen Koplan, 1999 – 2003

- Skidmore College
  Assistant Professor of Economics, 1997 – 1999

Professional Affiliations

- American Economic Association

- Licensing Executives Society

- International Trade Commission Trial Lawyers Association (Associate Member)

Expert Testimony

1. *Certain Cellular Base Station Communication Equipment*
   Apple Inc. v. Ericsson Inc., et al.
   U.S. International Trade Commission
   Investigation No. 337-TA-1302
   Patent Infringement

2. *Core Orientation Systems*
   Australian Mud Co. Pty Ltd., Reflex USA LLC v. Boart Longyear Group Ltd., et al.
   U.S. International Trade Commission
   Investigation No. 337-TA-1309
   Patent Infringement

3. *Certain Playards and Strollers*
   Graco Children's Products Inc., et al. v. Baby Trend, Inc., et al.
   U.S. International Trade Commission
   Investigation No. 337-TA-1288
   Patent Infringement

4. *Certain High-Performance Gravity-Fed Water Filters and Products Containing Same*
   Brita LP v. **Zero Technologies LLC and Culligan International Co.**
   U.S. International Trade Commission
   Investigation No. 337-TA-1294
   Patent Infringement

5. *Certain Oil-Vaping Cartridges, Components Thereof, and Products Containing*
   Shenzhen Smoore Technology Limited v. Blinc Group Holdings, LLC, et al.
   U.S. International Trade Commission
   Investigation No. 337-TA-1286
   Patent Infringement

6. *Certain Flocked Swabs, Products Containing Flocked Swabs, and Methods of Using*
   Copan Industries, Inc., et al. v. **NEST Scientific Inc., et al.**
   U.S. International Trade Commission
   Investigation No. 337-TA-1279
   Patent Infringement

7. *Certain Video Security Equipment and Systems, Related Software, Components Thereof, and Products Containing Same*
    Avigilon Corporation, Motorola Solutions, Inc., et al. v. Verkada Inc.
    U.S. International Trade Commission
    Investigation No. 337-TA-1281
    Patent Infringement

8. *Certain Replacement Automotive Lamps*
    Kia Corporation and Kia America, Inc. v. **TYC Brother Industrial Co., Ltd.; Genera Corporation; LKQ Corporation; Keystone Automotive Industries, Inc.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1291
    Patent Infringement

9. *Certain Replacement Automotive Lamps*
    Hyundai Motor Company, et al. v. **TYC Brother Industrial Co., Ltd.; Genera Corporation; LKQ Corporation; Keystone Automotive Industries, Inc.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1292
    Patent Infringement

10. *Certain Wearable Electronic Devices with ECG Functionality and Components Thereof*
    AliveCor, Inc. v. **Apple Inc.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1266
    Patent Infringement

11. *Certain Radio Frequency Transmission Devices and Components Thereof*
    Zebra Technologies v. OnAsset Intelligence, Inc.
    U.S. International Trade Commission
    Investigation No. 337-TA-1278
    Patent Infringement

12. *Certain Fitness Devices, Streaming Components Thereof and Systems*
    DISH DBS Corporation, et al. v. iFIT, Inc.; Peloton Interactive, Inc.; et al.
    U.S. International Trade Commission
    Investigation No. 337-TA-1265
    Patent Infringement

13. *Certain Portable Battery Jump Starters and Components Thereof*
    The NOCO Company v. **Schumacher Electric Corporation; et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1256
    Patent Infringement

14. *Certain IP Camera Systems Including Video Doorbells and Components Thereof*
    SkyBell Technologies, Inc. et al. v. Vivint Smart Home, Inc.; SimpliSafe, Inc.; et al.
    U.S. International Trade Commission
    Investigation No. 337-TA-1242
    Patent Infringement

15. *Certain UMTS and LTE Cellular Communications Modules*
    Koninklijke Philips N.V, et al. v. **Thales DIS AIS USA, LLC, Thales DIA AIS Deutschland GmbH,** et al.
    U.S. International Trade Commission
    Investigation No. 337-TA-1240
    Patent Infringement

16. *Certain Radio Frequency Identification Products, Components Therefore, and Products Containing the Same*
    Amtech Systems, LLC v. Kapsch TrafficCom AG, et al.
    U.S. International Trade Commission
    Investigation No. 337-TA-1234
    Patent Infringement

17. *Certain Shingled Solar Modules, Components Thereof, and Methods for Manufacturing*
    The Solaria Corporation v. **Canadian Solar Inc. and Canadian Solar (USA) Inc.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1223
    Patent Infringement

18. *Certain Artificial Eyelash Extension Systems, Products, and Components Thereof*
    Lashify, Inc. v. **KISS Nail Products, Inc., Ulta Salon, Cosmetics & Fragrance, Inc., Walmart, Inc. and CVS Pharmacy, Inc.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1226
    Patent Infringement

19. Zimmer, Inc., et al. v. **Heraeus Medical LLC, et al.**
    Kosciusko County Superior Court, State of Indiana, Marshall County
    Cause No. 43D01-1802-PL-000021
    Trade Secret Misappropriation, Breach of Contract, Tortious Interference

20. *Certain Variable Speed Wind Turbine Generators and Components Thereof*
    General Electric Company v. **Siemens Gamesa Renewable Energy Inc., et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1218
    Patent Infringement

21. **Shure Incorporated, et al.** v. ClearOne, Inc.
    U.S. District Court – District of Delaware
    Civil Action No. 19-1343-RGA-CJB
    Patent Infringement, False Advertising, Tortious Interference, Unfair Competition

22. Micro Focus (US), Inc., et al. v. **Insurance Services Office, Inc.**
    U.S. District Court – District of Delaware
    Case No. 15-252-RGA
    Breach of Contract, Copyright Infringement

23. *Certain Movable Barrier Operator Systems and Components Thereof*
    Overhead Door Corporation and GMI Holdings, Inc v. **The Chamberlain Group, Inc.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1209
    Patent Infringement

24. **Medline Industries, Inc.** v. C.R. Bard, Inc.
    U.S. District Court – Northern District of Illinois, Eastern Division
    Civil Action No. 1:17-cv-07216
    Patent Infringement

25. Arendi S.A.R.L. v. **LG Electronics, Inc., et al.**
    U.S. District Court – District of Delaware
    Case No. 1:12-cv-01595 (LPS)
    Patent Infringement

26. *Certain Electronic Devices, Including Streaming Players, Televisions, Set Top Boxes,
    Remote Controllers, and Components Thereof*
    Universal Electronics, Inc. v. **Roku, Inc., et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1200
    Patent Infringement

27. *Certain Chemical Mechanical Planarization Slurries and Components Thereof*
    CMC Materials, Inc. v. DuPont de Nemours, Inc., et al.
    U.S. International Trade Commission
    Investigation No. 337-TA-1204
    Patent Infringement

28. *Certain Portable Gaming Console Systems with Attachable Handheld Controllers*
    Gamevice, Inc. v. **Nintendo Co., Ltd. and Nintendo of America, Inc.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1197
    Patent Infringement

29. *Certain Lithium-Ion Battery Cells, Battery Modules, Battery Packs*
   LG Chem, Ltd. and LG Chem Michigan Inc., et al. v. SK Innovation Co., Ltd, et al.
   U.S. International Trade Commission
   Investigation No. 337-TA-1181
   Patent Infringement

30. *Certain Pouch-Type Battery Cells, Battery Modules, and Battery Packs*
   SK Innovation Co., Ltd, et al. v. **LG Chem, Ltd. and LG Chem Michigan Inc.**
   U.S. International Trade Commission
   Investigation No. 337-TA-1179
   Patent Infringement

31. *Certain Bone Cements and Bone Cement Accessories*
   Zimmer, Inc., et al. v. **Heraeus Medical GmbH and Heraeus Medical LLC**
   U.S. International Trade Commission
   Investigation No. 337-TA-1175
   Trade Secret Misappropriation, False Advertising, Tortious Interference

32. **Medline Industries, Inc.** v. C.R. Bard, Inc.
   U.S. District Court – Northern District of Illinois, Eastern Division
   Civil Action No. 1:16-cv-03529
   Patent Infringement

33. *Certain Wireless Communication Devices and Related Components Thereof*
   Innovation Sciences LLC v. **Resideo Technologies, Inc, HTC Corporation, et al.**
   U.S. International Trade Commission
   Investigation No. 337-TA-1180
   Patent Infringement

34. ClearOne, Inc. v. **Shure Incorporated**
   U.S. District Court – Northern District of Illinois, Eastern Division
   Civil Action No. 1:17-cv-03078
   Patent Infringement

35. *Certain Laparoscopic Surgical Staplers, Reload Cartridges, and Components Thereof*
   Ethicon LLC, et al. v. **Intuitive Surgical, Inc., et al.**
   U.S. International Trade Commission
   Investigation No. 337-TA-1167
   Patent Infringement

36. *Certain Foodservice Equipment and Components Thereof*
   Illinois Tool Works Inc., et al. v. **Guangzhou Rebenet Catering Equipment Manufacturing Co., Ltd., et al.**
   U.S. International Trade Commission
   Investigation No. 337-TA-1166
   Patent Infringement

RX-0812C.0007

37. *Certain Vehicle Security and Remote Convenience Systems and Components Thereof*
DEI Holdings, Inc., Directed, LLC and Directed Electronics Canada Inc. v.
Automotive Data Solutions, Inc. and Firstech, LLC
U.S. International Trade Commission
Investigation No. 337-TA-1152
Patent Infringement

38. *Certain Multi-Stage Fuel Vapor Canister Systems and Activated Carbon Components Thereof*
Ingevity Corp. and Ingevity South Carolina, LLC v. MAHLE Filter Systems North America, Inc., et al.
U.S. International Trade Commission
Investigation No. 337-TA-1140
Patent Infringement

39. Automotive Data Solutions, Inc. v. **Directed Electronics Canada Inc., DEI Holdings, Inc. and Directed, LLC**
U.S. District Court – Central District of California
No. 2:18-cv-01560-GW
Patent Infringement, Copyright Infringement, Trade Secret Misappropriation

40. **Medline Industries, Inc.** v. C.R. Bard, Inc.
U.S. District Court – Northern District of Illinois, Eastern Division
Civil Action No. 1:14-cv-03618
Patent Infringement

41. *Certain Unmanned Aerial Vehicles and Components Thereof*
Autel Robotics USA LLC v. SZ DJI Technology Co. Ltd., DJI Technology Inc., et al.
U.S. International Trade Commission
Investigation No. 337-TA-1133
Patent Infringement

42. *Certain Wireless Mesh Networking Products and Related Components Thereof*
SIPCO LLC v. **Emerson Electric Co.**, et al.
U.S. International Trade Commission
Investigation No. 337-TA-1131
Patent Infringement

43. *Certain Motorized Vehicles and Components Thereof*
FCA US LLC v. Mahindra & Mahindra Ltd.; Mahindra Automotive North America, Inc.
U.S. International Trade Commission
Investigation No. 337-TA-1132
Trademark and Trade Dress Infringement

44. *Certain Magnetic Data Storage Tapes and Cartridges Containing the Same*
Fujifilm Corporation, et al v. Sony Corporation, et al.
U.S. International Trade Commission
Investigation No. 337-TA-1012 (Enforcement Proceeding)
Patent Infringement

45. Core Wireless Licensing S.A.R.L. v. **LG Electronics, Inc. and LG Electronics Mobilecomm U.S.A., Inc.**
U.S. District Court – Eastern District of Texas, Marshall Division
Case No. 2:14-cv-912-JRG-RSP (Damages Retrial)
Patent Infringement

46. *Certain Microfluidic Systems and Components Thereof and Products Containing Same*
10X Genomics, Inc. v. Bio-Rad Laboratories, Inc.
U.S. International Trade Commission
Investigation No. 337-TA-1100
Patent Infringement

47. *Certain Memory Modules and Components Thereof, and Products Containing Same*
Netlist Inc. v. **SK hynix Inc., SK hynix America, Inc. et al.**
U.S. International Trade Commission
Investigation No. 337-TA-1089
Patent Infringement

48. *Certain Strontium-Rubidium Radioisotope Infusion Systems and Components Thereof Including Generators*
Bracco Diagnostics Inc. v. **Jubilant DraxImage Inc. et al.**
U.S. International Trade Commission
Investigation No. 337-TA-1110
Patent Infringement

49. Rick C. Sasso, M.D. v. **Warsaw Orthopedic, Inc., Medtronic, Inc., et al.**
Plymouth Circuit Court, State of Indiana, Marshall County
Cause No. 50C01-1806-PL-000027
Breach of Contract

50. **VIZIO, Inc.** v. Nichia Corporation
The United States Patent and Trademark Office, Patent Trial and Appeal Board
Case Nos. IPR2017-01608 and IPR2017-01623
Patent Review

51. Epistar Corporation v. **Lowe's Companies, Inc. and Lowe's Home Centers, LLC**
U.S. District Court – Central District of California
Case No. 2:17-cv-03219
Patent Infringement

52. *Certain Gas Spring Nailer Products and Components Thereof*
Kyocera Senco Brands Inc. v. **Hitachi Koki U.S.A., Ltd.**
U.S. International Trade Commission
Investigation No. 337-TA-1082
Patent Infringement

53. *Certain Clidinium Bromide and Products Containing Same*
Valeant Pharmaceuticals North America LLC et al. v. ECI Pharmaceuticals, et al.
U.S. International Trade Commission
Investigation No. 337-TA-1109
False Advertising, Unfair Competition

54. Nuance Communications, Inc. et al. v. **Pindrop Security, Inc.**
U.S. District Court – Eastern District of Virginia, Alexandria Division
Civil Action No. 1:17cv1193 (CMH/IDD)
Breach of Contract, Copyright Infringement, Unfair Competition

55. *Certain Batteries and Electrochemical Devices Containing Composite Separators, Components Thereof, and Products Containing the Same*
LG Chem, Ltd., et al v. Amperex Technology Limited, et al.
U.S. International Trade Commission
Investigation No. 337-TA-1087
Patent Infringement

56. *Certain Automated Teller Machines, ATM Modules, Components Thereof, and Products Containing the Same*
Nautilus Hyosung, Inc., et al. v. Diebold Nixdorf, Incorporated, et al.
U.S. International Trade Commission
Investigation No. 337-TA-989 (Enforcement Proceeding)
Patent Infringement

57. *Certain Electrochemical Glucose Monitoring Systems and Components Thereof*
Dexcom, Inc. v. **AgaMatrix, Inc.**
U.S. International Trade Commission
Investigation No. 337-TA-1075
Patent Infringement

58. *Certain Magnetic Data Storage Tapes and Cartridges Containing the Same*
Fujifilm Corporation, et al v. Sony Corporation, et al.
U.S. International Trade Commission
Investigation No. 337-TA-1076
Patent Infringement

59. *Certain Solid State Storage Drives, Stacked Electronics Components, and Products Containing Same*
BiTMICRO, LLC v. **SK hynix Inc., Samsung Semiconductor, Inc. et al.**
U.S. International Trade Commission
Investigation No. 337-TA-1097
Patent Infringement

60. *Certain Robotic Vacuum Cleaning Devices and Components Thereof*
iRobot Corporation v. Bissell Homecare, Inc., Hoover, Inc., et al.
U.S. International Trade Commission
Investigation No. 337-TA-1057
Patent Infringement

61. *Certain Magnetic Tape Cartridges and Components Thereof*
Sony Corporation, et al. v. **Fujifilm Corporation, et al.**
U.S. International Trade Commission
Investigation No. 337-TA-1058
Patent Infringement

62. *Certain Semiconductor Devices and Consumer Audiovisual Products Containing Same*
Broadcom Corporation v. **MediaTek Inc., MediaTek USA Inc. and MStar Semiconductor Inc.**
U.S. International Trade Commission
Investigation No. 337-TA-1047
Patent Infringement

63. *Certain Digital Cable and Satellite Products, Set-Top Boxes, Gateways, and Components Thereof*
Sony Corporation, et al. v. **ARRIS International plc, Pace Americas LLC, et al.**
U.S. International Trade Commission
Investigation No. 337-TA-1049
Patent Infringement

64. *Certain Graphics Systems, Components Thereof, and Consumer Products Containing the Same*
ATI Technologies ULC, et al. v. **VIZIO, MediaTek Inc., Sigma Designs, Inc., et al.**
U.S. International Trade Commission
Investigation No. 337-TA-1044
Patent Infringement

65. *Certain Magnetic Tape Cartridges and Components Thereof*
Sony Corporation, et al. v. **Fujifilm Corporation, et al.**
U.S. International Trade Commission
Investigation No. 337-TA-1036
Patent Infringement

66. **Huawei Technologies Co. Ltd.** v. T-Mobile US, Inc. and T-Mobile USA, Inc.
    U.S. District Court – Eastern District of Texas, Marshall Division
    Case Nos. 2:16-cv-00052-JRG-RSP, 2:16-cv-00055-JRG-RSP,
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    Patent Infringement

67. **Amneal Pharmaceuticals, LLC** v. Purdue Pharma L.P., et al.
    The United States Patent and Trademark Office, Patent Trial and Appeal Board
    Case Nos. IPR2016-01027 and IPR2016-01028
    Patent Review

68. *Certain Audio Processing Hardware, Software, and Products Containing the Same*
    Andrea Electronics Corporation v. **Apple Inc., Samsung Electronics Co., Ltd. et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1026
    Patent Infringement

69. *Certain Sleep-Disordered Breathing Treatment Mask Systems*
    ResMed Corp.; ResMed Inc.; et al. v. Fisher & Paykel Healthcare, Inc. et al.
    U.S. International Trade Commission
    Investigation No. 337-TA-1022
    Patent Infringement

70. *Certain Memory Modules and Components Thereof*
    Netlist Inc. v. **SK hynix Inc., SK hynix America, Inc. et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-1023
    Patent Infringement

71. Audio MPEG, Inc. et al. v. **Dell, Inc.**
    U.S. District Court – District of Virginia
    Case No. 2:15-cv-73 (HCM/RJK)
    Patent Infringement

72. *Certain Mobile Electronic Devices Incorporating Haptics*
    Immersion Corporation v. **Apple Inc. and AT&T Mobility LLC**
    U.S. International Trade Commission
    Investigation No. 337-TA-1004/990
    Patent Infringement

73. Nokia Technologies LTD v. **LG Electronics Inc.**
    ICC International Court of Arbitration
    ICC Case No. 22326/EMT/GR

74. *Certain Magnetic Data Storage Tapes and Cartridges Containing the Same*
Fujifilm Corporation, et al v. Sony Corporation, et al.
U.S. International Trade Commission
Investigation No. 337-TA-1012
Patent Infringement

75. *Certain Silicon-On-Insulator Wafers*
Silicon Genesis Corporation v. **Soitec S.A.**
U.S. International Trade Commission
Investigation No. 337-TA-1025
Patent Infringement

76. *Certain Sleep-Disordered Breathing Treatment Systems and Components Thereof*
ResMed Corp.; ResMed Inc.; and ResMed Ltd. v. BMC Medical Co., Ltd. et al.
U.S. International Trade Commission
Investigation No. 337-TA-997
Patent Infringement

77. *Certain Automated Teller Machines, ATM Modules, Components Thereof, and Products Containing the Same*
Nautilus Hyosung, Inc., et al. v. Diebold, Incorporated, et al.
U.S. International Trade Commission
Investigation No. 337-TA-989
Patent Infringement

78. Core Wireless Licensing S.A.R.L. v. **LG Electronics, Inc. and LG Electronics Mobilecomm U.S.A., Inc.**
U.S. District Court – Eastern District of Texas, Marshall Division
Case No. 2:14-cv-912-JRG-RSP
Patent Infringement

79. *Certain RF Capable Integrated Circuits and Products Containing the Same*
ParkerVision, Inc. v. **Qualcomm Incorporated; Apple Inc.; LG Electronics, Inc.; Samsung Electronics Co., Ltd.; et al.**
U.S. International Trade Commission
Investigation No. 337-TA-982
Patent Infringement

80. *Certain Automated Teller Machines, ATM Modules, Components Thereof, and Products Containing Same*
Diebold, Incorporated, et al. v. **Nautilus Hyosung, Inc., et al.**
U.S. International Trade Commission
Investigation No. 337-TA-972
Patent Infringement

81. *Certain Wearable Activity Tracking Devices, Systems, and Components Thereof*
Fitbit, Inc. v. **AliphCom, Inc. d/b/a/ Jawbone and BodyMedia, Inc.**
U.S. International Trade Commission
Investigation No. 337-TA-973
Patent Infringement

82. Oracle USA, Inc. et al. v. **Rimini Street, Inc. and Seth Ravin**
U.S. District Court – District of Nevada
Case No. 2:10-cv-0106-LRH-PAL
Copyright Infringement

83. Core Wireless Licensing S.A.R.L. v. **LG Electronics, Inc. and LG Electronics Mobilecomm U.S.A., Inc.**
U.S. District Court – Eastern District of Texas, Marshall Division
Case No. 2:14-cv-911-JRG-RSP
Patent Infringement

84. *Certain Variable Valve Actuation Devices and Automobiles Containing the Same*
Jacobs Vehicle Systems, Inc. v. **Fiat Chrysler Automobiles N.V.; FCA US LLC, et al.**
U.S. International Trade Commission
Investigation No. 337-TA-954
Patent Infringement

85. Zimmer, Inc. v. **Stryker Corporation; Howmedica Osteonics Corp.; et al.**
U.S. District Court – Northern District of Indiana
Case No. 3:14-cv-00152-JD-CAN
Breach of Contract, Breach of Fiduciary Duty, Unfair Competition, Tortious Interference

86. *Certain Electronic Devices, Including Wireless Communication Devices, Computers, Tablet Computers, Digital Media Players, and Cameras*
Ericsson Inc. and Telefonaktiebolaget LM Ericsson v. **Apple Inc.**
U.S. International Trade Commission
Investigation No. 337-TA-952
Patent Infringement

87. *Certain Lithium Metal Oxide Cathode Materials, Lithium-Ion Batteries for Power Tool Products Containing Same, and Power Tool Products with Lithium-Ion Batteries Containing Same*
BASF Corporation and UChicago Argonne, LLC v. **Umicore S.A.; Umicore USA, Inc.**; et al.
U.S. International Trade Commission
Investigation No. 337-TA-951
Patent Infringement

RX-0812C.0014

88. *Certain Network Devices, Related Software and Components Thereof (II)*
Cisco Systems, Inc. v. **Arista Networks, Inc.**
U.S. International Trade Commission
Investigation No. 337-TA-945
Patent Infringement

89. *Certain Light-Emitting Diode Products and Components Thereof*
Cree, Inc. v. **Feit Electric Co. Inc.; Unity Opto Technology, Co. Ltd.; et al.**
U.S. International Trade Commission
Investigation No. 337-TA-947
Patent Infringement, False Advertising

90. *Certain Three-Dimensional Cinema Systems and Components Thereof*
RealD, Inc. v. **MasterImage 3D, Inc. and MasterImage 3D Asia, LLC**
U.S. International Trade Commission
Investigation No. 337-TA-939
Patent Infringement

91. *Certain Network Devices, Related Software and Components Thereof (I)*
Cisco Systems, Inc. v. **Arista Networks, Inc.**
U.S. International Trade Commission
Investigation No. 337-TA-944
Patent Infringement

92. **LG Chem, LTD.** v. Celgard, LLC
The United States Patent and Trademark Office, Patent Trial and Appeal Board
Case No. IPR2014-00692
Patent Review

93. Pfizer Inc. and UCB Pharma GMBH v. **Alkem Pharmaceuticals, Inc. et al.**
U.S. District Court – District of Delaware
Case No. 1:13-cv-01110-GMS
Patent Infringement

94. *Certain Consumer Electronics and Display Devices with Graphics Processing and Graphics Processing Units Therein*
NVIDIA Corporation v. **Qualcomm Inc.;** Samsung Electronics Co., Ltd.; et al.
U.S. International Trade Commission
Investigation No. 337-TA-932
Patent Infringement

95. **Heckler & Koch, Inc., Heckler & Koch GmbH, et al.** v. German Sport Guns GmbH and American Tactical Imports, Inc.
U.S. District Court – Southern District of Indiana
Case No. 1:11-CV-1108 SEB-TAB
Breach of Contract, Tortious Interference

RX-0812C.0015

96. *Certain Television Sets, Television Receivers, Television Tuners, and Components Thereof*
Cresta Technology Corporation v. **Silicon Laboratories Inc.; MaxLinear, Inc.; et al.**
U.S. International Trade Commission
Investigation No. 337-TA-910
Patent Infringement

97. *Certain Non-Volatile Memory Devices and Products Containing Same*
Macronix International Co., Ltd. et al. v. **Spansion, Inc. et al.**
U.S. International Trade Commission
Investigation No. 337-TA-909
Patent Infringement

98. *Certain Soft-Edged Trampolines and Components Thereof*
Springfree Trampoline, Inc. et al. v. Vuly Trampolines Pty. Ltd.
U.S. International Trade Commission
Investigation No. 337-TA-908
Patent Infringement

99. *Certain Optical Disc Drives, Components Thereof and Products Containing Same*
Optical Devices, LLC v. **Lenovo Group Ltd.; LG Electronics, Inc.; et al.**
U.S. International Trade Commission
Investigation No. 337-TA-897
Patent Infringement

100. *Certain Sleep-Disordered Breathing Treatment Systems and Components Thereof*
ResMed Corp.; ResMed Inc.; and ResMed Ltd. v. BMC Medical Co., Ltd. et al.
U.S. International Trade Commission
Investigation No. 337-TA-890
Patent Infringement

101. United Therapeutics Corporation v. **Sandoz, Inc.**
U.S. District Court – District of New Jersey
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Patent Infringement

102. *Certain Microelectromechanical Systems ("MEMS Devices") and Products Containing the Same*
STMicroelectronics, Inc. v. **InvenSense, Inc.; Roku, Inc.; and Black & Decker, Inc.**
U.S. International Trade Commission
Investigation No. 337-TA-876
Patent Infringement

103. *Certain Wireless Communications Equipment and Articles Therein*
    Samsung Electronics Co. Ltd., et al. v. Ericsson Inc. et al.
    U.S. International Trade Commission
    Investigation No. 337-TA-866
    Patent Infringement

104. *Certain Wireless Devices with 3G and/or 4G Capabilities and Components Thereof*
    InterDigital Communications, Inc. et al. v. **Huawei Technologies Co., Ltd., et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-868
    Patent Infringement

105. *Certain Electronic Devices, Including Wireless Communication Devices, Tablet
    Computers, Media Players, and Televisions, and Components Thereof*
    Ericsson Inc. et al. v. **Samsung Electronics Co. Ltd., et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-862
    Patent Infringement

106. *Reduced Folate Nutraceutical Products and L-methylfolate Raw Ingredients*
    Merck & Cie, Pamlab, LLC, et al. v. Macoven Pharmaceuticals, Inc. et al.
    U.S. International Trade Commission
    Investigation No. 337-TA-857
    Patent Infringement

107. *Certain Wireless Consumer Electronics Devices and Components Thereof*
    Technology Properties Limited LLC et al. v. **Acer Inc.; Amazon.com; et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-853
    Patent Infringement

108. *Certain Audiovisual Components and Products Containing the Same*
    LSI Corporation and Agere Systems, Inc. v. **Funai Electric Co., Ltd., et al.**
    U.S. International Trade Commission
    Investigation No. 337-TA-837
    Patent Infringement

109. *Certain Electronic Imaging Devices*
    FlashPoint Technology, Inc. v. **ZTE Corporation,** et al.
    U.S International Trade Commission
    Investigation No. 337-TA-850
    Patent Infringement

110. *Certain Consumer Electronics and Display Devices and Products Containing Same*
Graphics Properties Holdings, Inc. v. **Research in Motion Corp.** et al.
U.S International Trade Commission
Investigation No. 337-TA-836
Patent Infringement

111. *Certain Food Waste Disposers and Components and Packaging Thereof*
Emerson Electric Co. v. **Anaheim Manufacturing Co. et al.**
U.S. International Trade Commission
Investigation No. 337-TA-838
Patent Infringement, Trade Dress Infringement

112. *Certain Electronic Digital Media Devices and Components Thereof*
Apple, Inc. v. **Samsung Electronics Co., Ltd. et al.**
U.S. International Trade Commission
Investigation No. 337-TA-796
Patent Infringement

113. **Del Monte International GmbH** v. Del Monte Philippines, Inc. and GTL Limited
American Arbitration Association
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114. Galderma Laboratories, L.P. et al. v. **Tolmar, Inc. and Actavis Mid Atlantic LLC**
U.S. District Court – District of Delaware
C.A. No. 10-cv-45 (LPS)
Patent Infringement

115. *Certain Semiconductor Chips and Products Containing Same*
Rambus, Inc. v. **Freescale Semiconductor, Inc. et al.**
U.S. International Trade Commission
Investigation No. 337-TA-753
Patent Infringement

116. *Certain Printing and Imaging Devices and Components Thereof*
Ricoh Company, Ltd. et al. v. Oki Data Corporation et al.
U.S. International Trade Commission
Investigation No. 337-TA-690
Patent Infringement

117. *MEMS Devices and Products Containing the Same*
Analog Devices, Inc. v. **Knowles Electronics LLC,** et al.
U.S. International Trade Commission
Investigation No. 337-TA-700
Patent Infringement

118. **Software Tree, LLC** v. Red Hat, Inc., et al.
U.S. District Court – Eastern District of Texas
6:09-cv-00097-LED
Patent Infringement

119. *Certain MLC Flash Memory Devices and Products Containing Same*
BTG International Inc. v. Samsung Electronics Co., Ltd. et al.
U.S. International Trade Commission
Investigation No. 337-TA-683
Patent Infringement

120. *Certain Silicon Microphone Packages, and Products Containing The Same*
Knowles Electronics, LLC v. Analog Devices, Inc.
U.S. International Trade Commission
Investigation No. 337-TA-695
Patent Infringement

121. *Certain Automotive Multimedia Display and Navigation Systems, Components Thereof,
and Products Containing Same*
Honeywell International, Inc. v. **Alpine Electronics, Inc.; Pioneer Corporation**
U.S. International Trade Commission
Investigation No. 337-TA-657
Patent Infringement

122. O'Gara—Hess & Eisenhardt Armoring Company LLC v. **Ibis Tek, LLC et al.**
Common Pleas Court of Butler County, Ohio
CV 2006 04 1157
Misappropriation of Confidential and Trade Secret Information

123. Multimatic, Inc. v. **Faurecia Interior Systems USA, Inc**.
U.S. District Court – Eastern District of Michigan
05-60120
Breach of Contract

124. Eaton Corporation v. **ZF Meritor LLC, et al.**
U.S. District Court – Eastern District of Michigan
03-74844
Patent Infringement

125. *Certain Automated Mechanical Transmission Systems for Medium-Duty and Heavy-
Duty Trucks, and Components Thereof*
Eaton Corporation v. **ZF Meritor LLC, et al.**
U.S. International Trade Commission
Investigation No. 337-TA-503
Patent infringement

RX-0812C.0019

126. *Certain Shirts with Pucker Free Seams and Methods of Producing Same*
TALTECH Limited, et al. v. **Esquel Apparel, Inc. et al.**
U.S. International Trade Commission
Investigation No. 337-TA-517
Patent infringement

127. *Certain Universal Transmitters for Garage Door Openers*
The Chamberlain Group, Inc. v. Skylink Technologies, Inc. et al.
U.S. International Trade Commission
Investigation No. 337-TA-497
Patent Infringement, Digital Millennium Copyright Act

Publications and Presentations

1. *"*Forum: Valuation and damages in IP disputes," *Financier Worldwide*, January 2017.

2. Speaker, *The Uncertain Future of At-Risk Launches: A Study of Injunctive Relief, Damages and the Impact of Protonix,* American Conference Institute's Second Annual Paragraph VI Disputes Master Symposium, Chicago, IL. October 1, 2014.

3. Speaker, *Valuation of Innovation Product and Intellectual Property Based Assets,* Institute of Food Technologists Pre-Annual Meeting Short Course: Commercializing Innovation in Food Products, New Orleans, LA. June 21, 2014.

4. Speaker, *Valuation of Innovation Product and Intellectual Property Based Assets,* Institute of Food Technologists Annual Meeting: Food Expo Forum, Chicago, IL. July 16, 2013.

5. Speaker, *Uniloc USA, Inc. v. Microsoft Corp.: The End of the 25% Rul*e*,* Licensing Executives Society Aerospace and Transportation Committee Webinar, August 1, 2012.

6. "Can We 'Spot' Price-Fixing from Price Patterns?" The *Economics Committee Newsletter*, American Bar Association Section of Antitrust Law, Vol. 12, No. 1, pages 3-6 (Summer 2012).

7. Speaker, *Valuation of Innovation Product and Intellectual Property Based Assets,* Institute of Food Technologists Pre-Annual Meeting Short Course: Commercializing Innovation in Food Products, Las Vegas, NV. June 25, 2012.

8. Guest Lecturer, Patent Litigation, Chicago-Kent College of Law. March 6, 2012.

9. Panel Speaker, *Damages*, 12th Annual Silicon Valley Advanced Patent Law Institute, Palo Alto, CA. December 9, 2011.

RX-0812C.0020

10. Speaker, *Technical Session: Intellectual Property Perspective, Patents & Valuation,* Chicago Section – Institute of Food Technologists, River Forest, IL. June 22, 2011.

11. Guest Lecturer, IP Litigation, John Marshall Law School. March 2, 2011.

12. Speaker, *Recent Developments at the U.S. International Trade Commission*, AIPPI-US Annual Meeting and International IP Forum, Chicago, IL. November 8, 2010.

13. Instructor, *Intellectual Asset Management: Valuation*, Licensing Executives Society Professional Development Series: Intermediate, Chicago, IL. July 14, 2010.

14. Instructor, *Intellectual Asset Management: Valuation*, Licensing Executives Society Professional Development Series: Intermediate, Toronto, ON. July 16, 2008.

15. Instructor, *Intellectual Asset Management: Valuation*, Licensing Executives Society Professional Development Series: Intermediate, San Francisco, CA. March 5, 2008.

16. Panel Speaker, *Potential Impact of the Proposed Legislative Changes to Infringement Remedies and Patent Practice*, Los Angeles Intellectual Property Law Association: Washington in the West Conference, Los Angeles, CA. January 30, 2008.

17. Instructor, *Valuation of Intellectual Property*, Practicing Law Institute: Annual Patent Law Institute, San Francisco, CA. January 29, 2008.

18. Instructor, *Advanced Valuation Skills*, Licensing Executives Society Professional Development Series: Intellectual Asset Management Advanced Series, Philadelphia, PA. June 13-14, 2007.

19. Instructor, *Advanced Valuation Skills*, Licensing Executives Society Professional Development Series: Intellectual Asset Management Advanced Series, San Francisco, CA. November 1-2, 2006.

20. Guest Lecturer, *Financial Issues for Engineers*, Master of Engineering Management Program, Northwestern University. March 2006.

21. "AFDC and Births to Unwed Women." With Kurt C. Schaefer and Sarah E. Hamersma. *Labour Economics*. 9, pages 801-813 (2002).

22. "Optimal Contracts for Teams: A Note on the Results of McAfee and McMillan." *International Economic Review*. 36(4), pages 1051-6 (November 1995).

ATTACHMENT J

REDACTED IN ENTIRETY