

JOSEPH J. LAVIOLA JR., Ph.D.

RESEARCH INTERESTS

User interfaces, interactive 2D and 3D graphics, human robot interaction, pattern recognition

EDUCATION

- 2005:** **Ph.D.**, Computer Science, Brown University
Dissertation: "Mathematical Sketching: A New Approach to Creating and Exploring Dynamic Illustrations"
Advisor: Andries van Dam
- 2001:** **Sc.M.**, Applied Mathematics, Brown University
- 2000:** **Sc.M.**, Computer Science, Brown University
Thesis: "Whole-Hand and Speech Input in Virtual Environments"
- 1996:** **B.S.**, Computer Science, Florida Atlantic University

PROFESSIONAL EXPERIENCE

- 2018-Present:** Charles N. Millican Professor of Computer Science, University of Central Florida, Orlando, FL
- 2014-Present:** Director of the Interactive Computing Experiences Research Cluster, University of Central Florida, Orlando, FL
- 2008-Present:** Affiliated Research Faculty, Institute for Simulation and Training, University of Central Florida, Orlando, FL
- 2013-Present:** Adjunct Associate Professor of Computer Science, Brown University, Providence, RI
- 2005-Present:** Co-founder and VP of Business Strategy, Fluidity Software, Inc., Somerville, MA
- 2000-Present:** Consultant, JJI Interface Consultants, Inc., Oviedo, FL

*Consulting services for user interface design and patent litigation.
My consultancies include Nextron Medical Technologies, Physion, Inc., Bellissima Cosmetics, Rosebud LMS, Inc., McKinsey and Co., Microsoft Research, Sixsense Entertainment, Inc. (Advisory Board Member), SNR Denton, Williams & Connolly LLP, Activision, InGenius Prep, Meta, Raytheon, Shore, Chan, Depumpo, Blackberry*

- 2015-2018:** Director of the Modeling and Simulation Graduate Program, University of Central Florida, Orlando, FL
- 2015-2018:** Charles N. Millican Faculty Fellow and Associate Professor of Computer Science, University of Central Florida, Orlando, FL
- 2012-2015:** CAE Link Professor and Associate Professor with Tenure in EECS, University of Central Florida, Orlando, FL
- 2006-2013:** Adjunct Assistant Professor of Computer Science (Research), Brown University, Providence, RI
- 2010-2012:** SAIC Faculty Fellow and Assistant Professor in EECS, University of Central Florida, Orlando, FL
- 2007-2010:** Assistant Professor, University of Central Florida, Orlando, FL
- 2006-2009:** Research Faculty, Microsoft Center for Research on Pen-Centric Computing, Providence, RI
- 2005-2006:** Postdoctoral Research Associate, Brown University, Providence, RI
- Continuing work in mathematical sketching as well as exploring how different orientation tracking algorithms work in augmented reality environments.*
- 1998-2005:** Research Assistant, Brown University Computer Graphics Lab, Providence, RI
- Developed mathematical sketching, an approach to making dynamic illustrations through the combination of handwritten mathematics and free-form drawings and created a mathematical expression recognition system. Studied how different factors such as motion style, sampling rate, prediction time, and noise variance affected various prediction algorithms for human motion tracking in virtual environments. Explored how multimodal interfaces could be used in virtual environments as well as the general topic of improving 3D interfaces in virtual environments. Assisted in the startup and development of the Brown University Technology Center for Advanced Scientific Computing and Visualization.*
- 1999:** Teaching Assistant, Brown University, CS-295-5, Interdisciplinary Scientific Visualization
- Maintained course web page, prepared class notes, graded homework.*
- 1997:** Research Scientist, Fraunhofer Center for Research in Computer Graphics, Providence, RI
- Developed demonstration applications for a table-based virtual environment display system utilizing 2D and 3D gesture-based interface techniques.*
- 1996:** Software Technician, UCS, Inc., Fort Lauderdale, FL
- Performed software test automation and software quality assurance.*
- 1995:** Student Intern, IBM, Boca Raton FL
- Maintained SQL database query system and performed website development tasks.*

HONORS AND AWARDS

2018: Appointed as the Charles N. Millican Professor of Computer Science

2018: Promoted to Full Professor in Computer Science at UCF

2018: UCF Scholarship of Teaching and Learning Award (SOTL)

2017: UCF Research Incentive Award (RIA)

2017: ACM CHI 2017 Honorable Mention Paper (top 5% of all paper submissions)

2016: Best Paper Award, Ninth IEEE International Conference on the Internet of Things 2016

2016: ACM CHI 2016 Honorable Mention Paper (top 4% of all paper submissions)

2015: Michael A. J. Sweeny Best Student HCI Paper Award – Graphics Interface 2015

2014: ACM CHI 2014 Honorable Mention Paper (top 5% of all paper submissions)

2014: UCF Reach for the Stars Award

2013: UCF Teaching Incentive Program Award (TIP)

2013: UCF Scholarship of Teaching and Learning Award (SOTL)

2013: UCF College of Engineering and Computer Science Deans Research Professorship Award

2013: UCF College of Engineering and Computer Science Excellence in Graduate Teaching Award

2012: Appointed the CAE Link Professor in Electrical Engineering and Computer Science at UCF

2012: UCF Research Incentive Award (RIA)

2012: Named IEEE Senior Member

2011: Best Paper Award, 8th International Conference on Advances in Computer Entertainment Technology

2011: Named ACM Senior Member

2011: Best Poster Award, Eurographics/ACM Symposium on Sketch-Based Interfaces and Modeling

2011: Named to the Eurographics Sketch-Based Interfaces and Modeling steering committee

2010: Appointed the SAIC Faculty Fellow in Electrical Engineering and Computer Science at UCF

2010: ACM CHI 2010 Honorable Mention Paper (top 5% of all paper submissions)

2010: UCF College of Engineering and Computer Science Distinguished Researcher Award

2009: Best Paper Award, Eurographics/ACM Symposium on Sketch-Based Interfaces and Modeling

2009: National Science Foundation CAREER Award

2008: Best Paper Award, 9th International Symposium on Smart Graphics

2007: UCF Presidential Major Equipment Award

2006: Best Paper Award, Eurographics Workshop on Sketch-Based Interfaces and Modeling

2004: Best Paper Presentation (Applied Estimation Session), 2004 American Control Conference

2000-2002, 2004: The van Dam Fellowship

1998: IBM Cooperative Fellowship

1996: FAU's Aaron Finerman Award

1996: FAU's Faculty Award for Outstanding Undergraduate Achievement

1995: Microsoft Senior Achievement Award

Also elected to Sigma Xi (1998), Phi Kappa Phi (1995), and Phi Eta Sigma (1993)

RESEARCH CONTACTS AND GRANTS

Total Funding: \$5,235,218

Total as PI: \$4,443,218

Total as Co-PI: \$792,000

My Share at UCF: \$4,439,131

Active Grants and Contracts

“Human-Swarm Interaction for the DARPA OFFSET Program”, Northrup Grumman Corporation, \$342,000, Sole PI (100% credit), March 2018 – July 2019.

“FHTCC: Human-Swarm Interaction for the DARPA OFFSET Program”, UCF/I-4 Match, \$91,333, Sole PI (100% credit), March 2018 – July 2019.

“Augmented Reality-Based Intelligent Tutoring in the Wild”, US Army RDECOM –STC Award W911QX13C0052, \$618,376, Sole PI (100% credit), Dec. 2014 – Sept. 2019.

“NRI: Collaborative Research: Sketching Geometry and Physics Informed Inference for Mobile Robot Manipulation in Cluttered Scenes”, NSF Award IIS-1638060, \$286,434, Sole PI (100% credit), Sept. 2016 – August 2019.

Past Grants and Contracts

“Interactive Visualization in Support of Decision Making under Uncertainty”, Office of Naval Research Award ONRBAA15001, \$660,000, Co-PI, (54.5% credit equals \$360,000), Sept. 2015 – May 2019.

“RF: Improving Augmented Reality Technologies for Training and Education”, Lockheed Martin Corporation, \$200,000, PI (80% credit equals \$160,000), Aug. 2016 – Aug. 2018.

“FHTCC: Improving Augmented Reality Technologies for Training and Education”, UCF/I-4 Match, \$66,666 PI (80% credit equals \$52,800), Aug. 2016 – Aug. 2018.

“Exploring the Benefits of Spatial IDEs”, Coda Enterprises, LLC, \$47,500, Sole PI (100% credit), Jan. 2016 – May 2017.

“Physics Based Multi-Touch Movement Interface Creation for 3D Modeling and Simulation, Phase II”, JHT Incorporated Award JHT13S0002 (Navy SBIR Phase II, Topic N121-061), \$187,500, Sole PI (100% credit), Oct. 2013 – Mar. 2016.

“Physics Based Multi-Touch Movement Interface Creation for 3D Modeling and Simulation, Phase II”, UCF/I-4 Match, \$122,270, Sole PI (100% credit), Aug. 2013 – Mar. 2016.

“CAREER: Mathematical Sketching: Pen-based Tools for Conceptual Understanding in Mathematics and Physics”, NSF CAREER Award IIS-0845921, \$459,776, Sole PI (100% credit), May 2009 – April 2016.

“REU Supplement to CAREER: Mathematical Sketching: Pen-based Tools for Conceptual Understanding in Mathematics and Physics”, NSF CAREER Award IIS-0845921, \$80,000, Sole PI (100% credit), May 2009 – April 2016.

“SHF: Large: A Working Set Approach to Integrated Development Environments”, NSF Award CCF-1012056, Sole PI (100% credit) on Subcontract from Brown University, \$179,823 of \$1,123,918, Aug. 2010 – July 2015.

“Major: Enhancing Creativity and Authoring in STEM Education-Based Virtual Worlds through Concept-Oriented Design”, NSF Award IIS-0856045, \$755,845, PI \$753,835, PI (70% credit equals \$527,684), July 2009 – June 2014.

“REU Supplement to Major: Enhancing Creativity and Authoring in STEM Education-Based Virtual Worlds through Concept-Oriented Design”, NSF Award IIS-0856045, \$40,000, Sole PI (100% credit), July 2010 – June 2014.

“Healthcare Informatics, Implementation, Long Term Care and Aging”, James A. Haley Veterans’ Hospital, \$26,661, Sole PI (100% credit), April 2013 – Mar. 2014.

“Feasibility for the Development of a Physics, Navigation, and Meta Gestures API for Training, Simulations, and Entertainment”, JHT Incorporated Award JHT12S0003 (Navy SBIR Phase I, Topic N121-061), \$42,100, Sole PI (100% credit), June 2012 – Dec. 2013.

“Feasibility for the Development of a Physics, Navigation, and Meta Gestures API for Training, Simulations, and Entertainment”, UCF/I-4 Match, \$14,033, Sole PI (100% credit), July 2012 – Dec. 2013.

“Extending Smart Home Technology for Cognitively Impaired Veterans to Delay Institutionalization (Part II)”, James A. Haley Veterans’ Hospital, \$33,000, Sole PI (100% credit), April 2013 – Sept. 2013.

“Naturalistic Operator Interface for Immersive Environments”, Design Interactive, Inc. Award EGO6389UCF (DoD OSD SBIR Phase I), \$49,700, PI (50% credit equals \$24,850), March 2013 – Aug. 2013.

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