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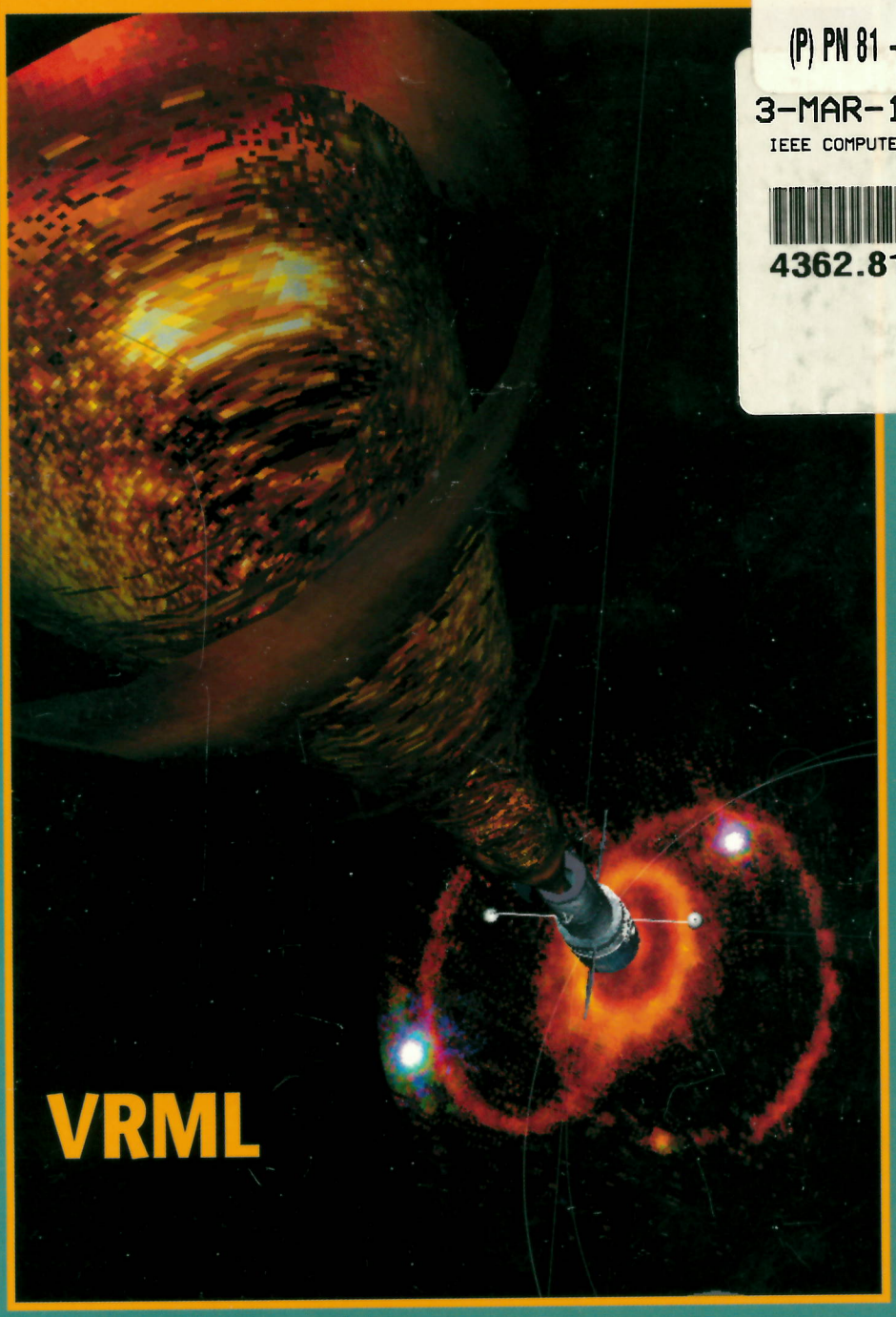

VRML

- Public Speaking in VR
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18 **Tutorial: Building Virtual Worlds with VRML**
David R. Nadeau
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30 **TerraVision II: Visualizing Massive Terrain Databases in VRML**
Martin Reddy, Yvan Leclerc, Lee Iverson, and Nat Bletter
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68 **A Framework for Streaming Geometry in VRML**
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79 **Dynamics Modeling and Culling**
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The tools described permit including large numbers of complex dynamic models in a VRML world easily and efficiently while maintaining high frame rates.

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TerraVision II: Visualizing Massive Terrain Databases in VRML

Martin Reddy, Yvan Leclerc, Lee Iverso
and Nat Bletter
SRI International

To disseminate 3D maps and spatial data over the Web, we designed massive terrain data sets accessible through either a VRML browser or the customized TerraVision II browser.

Researchers have increasingly turned to Virtual Reality Modeling Language (VRML) to represent geographic information. In VRML's early days, the result was a few toy examples that did not scale well, such as coarse, single-resolution elevation grids. Today, VRML is drawing more serious interest from researchers across the spectrum, including geographers, cartographers, geologists, and computer scientists, as the sidebar "Related Work" describes. As Theresa-Marie Rhyne noted, geographic information system (GIS) and scientific visualization tools have begun to expand into each other's domains,[1] and VRML offers cartographers the potential to disseminate 3D m data over the World Wide Web. However not seen useful large-scale VRML geogr

We aim to enable visualization of nea 3D models of terrain that can be on th dreds of gigabytes. This might include d terrain imagery for particular regions models and auxiliary information for g

The following scenario indicates required. Say a user wants to find a pa in a particular city. Her journey begins of the earth viewed from space. This mapped with satellite imagery of 100 lution—that is, each pixel in the textur a region on the planet's surface cove find the city, the user first rotates the

Related Work

Currently, interesting and significant work addresses the problem of representing geographic data in VRML. In the earth sciences, Kate Moore described the work of the Virtual Field Course (VFC) project,[1] which is developing software tools to familiarize students with fieldwork locations and aid data collection and analysis. The VFC project uses VRML and Java to provide interactive 2D and 3D views of geo-referenced data to enhance students' cognition of the real environment.

The US Naval Postgraduate School is currently working on a project to develop a 3D model of the Monterey Bay National Marine Sanctuary. They aim to create a VRML representation of the sanctuary based on raw bathymetry (below sea level) data for a 2.5 × 2.5 degree region of the bay. Their representation uses multiresolution techniques to deliver these large data amounts over a 28K modem connection.

Michael Abernathy and Sam Shaw their work using VRML to visualize t 197-mile relay race through the Sa Area.[2] They did this using standard Survey (USGS) 7.5 arc min digital e models (DEMs) for the terrain geo referenced satellite imagery drape terrain. Their system also used Glo System (GPS) input to create a line showing the race's course over the

References

1. K. Moore, "Interactive Virtual En work," *British Cartographic Society* available at http://www.geog.le.ac
2. M. Abernathy and S. Shaw, "Int Information in VRML Models," VRML, ACM New York, 1998, pp

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Karen Anderson
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8th January 2016

Dear Ms Anderson,

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