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Articles

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Guest Editor's Introduction: Virtual Reality Modeling Language Maureen Stone

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Tutorial: Building Virtual Worlds with VRML David R. Nadeau

VRML makes it easy to create virtual worlds. This tutorial reviews VRML's syntax and features as well as its world construction and animation abilities.

TerraVision II: Visualizing Massive Terrain Databases in VRML Martin Reddy, Yvan Leclerc, Lee Iverson, and Nat Bletter

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

Large-Scale Mine Visualization Using VRML

Keith Russ and Andrew Wetherelt Traditionally, mine plans and sections in 2D stored 3D information. This article shows that using VRML to model this information leads to new, interactive methods of data visualization.

"Bottom, Thou Art Translated": The Making of VRML Dream Stephen N. Matsuba and Bernie Roehl

Bringing virtual theater to the Web requires 3D graphics, efficient networking, and strong content. The authors discuss the VRML Dream Project, a realtime Internet performance.

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Developing the VRML 97 International Standard George S. Carson, Richard F. Puk, and Rikk Carey

VRML 97 arose from a cooperative effort between the standards and VRML communities. The methodology employed applies equally well to development of future standards.

VRML Testing: Making VRML Worlds Look the Same Everywhere Mary Brady, Alden Dima, Len Gebase, Michael Kass, Carmelo Montanez-Rivera, and Lynne Rosenthal

NIST tools address problems posed by testing 3D graphics. This article explains the test development strategy and design issues in developing and delivering these testing tools.

A Framework for Streaming Geometry in VRML

André Guéziec, Gabriel Taubin, Bill Horn, and Francis Lazarus

The authors introduce a framework for streaming geometry in VRML that eliminates the need to perform complete downloads of geometric models before starting to display them.

Dynamics Modeling and Culling Stephen Chenney, Jeffrey Ichnowski, and David Forsyth

The tools described permit including large numbers of complex dynamic models in a VRML world easily and efficiently while maintaining high frame rates.

http://computer.org/cga/

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TerraVision II: Visualizing Massive Terrain Databases in VRML

Martin Reddy, Yvan Leclerc, Lee Ivers 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.

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Researchers have in-Rcreasingly 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, geo-

graphic 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 3Dm data over the World Wide Web. However, not seen useful large-scale VRML geograms

We aim to enable visualization of net 3D models of terrain that can be on th dreds of gigabytes. This might included terrain imagery for particular region models and auxiliary information for

The following scenario indicates required. Say a user wants to find a parin 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 texture 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 Sha their work using VRML to visualize 197-mile relay race through the Sa Area.² They did this using standard Survey (USGS) 7.5 arc min digitale models (DEMs) for the terrain geo referenced satellite imagery drapt terrain. Their system also used Ga System (GPS) input to create a line showing the race's course over the

References

- K. Moore, "Interactive Virtual En work," British Cartographic Society available at http://www.geog.lear
- M. Abernathy and S. Shaw, "Int Information in VRML Models, VRML, ACM New York, 1998, pr

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March/April 1999

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8th January 2016

Dear Ms Anderson,

<u>TerraVision II: visualizing massive terrain databases in VRML (Volume:19, Issue: 2)</u> <u>March/April 1999</u> <u>Title: IEEE computer graphics and applications.</u> <u>Contributor: IEEE Computer Society. ;</u> <u>National Computer Graphics Association (U.S.)</u> <u>Publication Details: [Los Alamitos, CA] : IEEE Computer Society : National Computer Graphics Association Identifier: ISSN 1558-1756; System</u> <u>Holdings Notes: Document Supply 4362.814300 Volume 1, issue 1 (1981)-***See ESTAR</u> <u>for full holdings.</u> <u>UIN: BLL01012433228</u> <u>Shelfmark(s): Document Supply 4362.814300</u>

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Yours sincerely

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