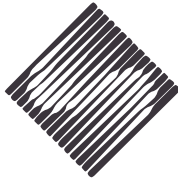


ACM SIGGRAPH VIDEO REVIEW



ISSUE 43

Special issue on
Visualization in Scientific Computing
July 1989

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ACM SIGGRAPH Video Review

Issue 43

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1. BRL Scientific Visualization Highlights

Contact:

Michael Muuss
Ballistic Research
Laboratory
Attn: SLCBR-SE (Muuss)
APG, MD 21005-5066
(301) 278-6678

Credits:

Michael Muuss and Phillip Dykstra; Also: Kurt Fickie, John Kuzan, Tom DiGiacinto, Kathy Zimmerman and Robert Reschly.

Technical Notes:

This tape presents highlights of scientific visualization work in progress at the US Army Ballistic Research Laboratory in the Spring of 1988.

The calculations shown are:

- (1) an interior ballistics and gun-tube dynamics calculation,
- (2) a no model turbulence calculation using spectral methods, and
- (3) an animation of radar wavefront propagation and scattering.

For information regarding the purchase of SIGGRAPH Video Review tapes, contact:

**SIGGRAPH Video Review
c/o 1st Priority
P.O. Box 576
Itasca, Illinois 60143-0576**

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Hardware:

Cray-2 and Cray X-MP/48,
Gould PN9080, SGI 4D/70GT,
Lyon Lamb VAS/4 and ENC VI,
Sony BVU 850.

Software:

Numerical calculations: in-house
codes; Rendering/animation:
BRL-CAD software, a
solid-modeling and ray-tracing
system BRL distributes free of
charge worldwide.

*© Copyright 1989, Ballistic
Research Laboratory.*

2. Stress Wave Propagation in Graphite/Epoxy Material

Contact:

Gib Cardwell
Precision Visuals, Inc. (PVI)
6260 Lookout Rd.
Boulder, CO 80301
(303) 530-9000, ext. 286

Credits:

D. Kriz and J.M. Gary (NIST);
G.F. Cardwell and J.D. Wille
(PVI).

Technical Notes:

A finite difference technique was
used to simulate a single-plane
stress wave in graphite/epoxy
material. The simulations
shows the wave moving through
and reflecting from the edges of
the material.

Hardware:

Sun 4/110

Software:

PV-WAVE by PVI

*© Copyright 1989, Precision Visuals,
Inc.*

3. SEA Accident Reconstruction

Contact:

Ruedy W. Leeman
SEA
7349 Worthington-Galena
Rd.
Columbus, OH 43085
(614) 888-4160

Credits:

Produced by Ruedy W. Leeman
and Christopher S. Iams.
Programming by Christopher S.
Iams and Doreen Close.

Technical Notes:

Vehicular accident
reconstruction and failure
analysis are just a few new
examples of 3D computer
animation.

Hardware:

Silicon Graphics IRIS 40/70GT

Software:

Wavefront and proprietary
software

© Copyright 1989, SEA.

4. Earthquake and Structural Response

Contact:

Makoto Suzuki
Ohsaki Research Institute
Shimizu Corporation
Fukoku Seimei Bldg.
2-2-2, Uchisaiwai-cho
Chiyoda-ku, Tokyo JAPAN
03/ 508-8101

Credits:

Makoto Suzuki (Ohsaki Research Institute and Shimizu Corporation).

Technical Notes:

This tape contains computer simulations of earthquake wave propagation, structural responses under earthquake, and a tsunami tidal wave.

Hardware:

FACOM M-380Q, F6520

Software:

Fujitsu CGMS

© Copyright 1989, Shimizu Corporation.

5. Interactive Earth Science Visualization

Contact:

Bill Hibbard
Space Science and Eng.
Center
Univ. of Wisconsin at
Madison
1225 W. Dayton St.
Madison, WI 53706
(608) 263-4427

Credits:

Bill Hibbard and Dave Santek;
Data from Pat Pauley and Paul Meyer.

Technical Notes:

This tape depicts a real-time simulation of an extra-tropical cyclone with convective storm activity over the northeast United States.

Hardware:

Stellar GS-1000

Software:

Man-Computer Interactive Data Access System (MCIDAS)

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6. A Little About Bones and Points of Insertion

Contact:

Patrick Doria
M.E.M. Institute for
Biomechanics
Murtenstr. 35
3008 Bern Switzerland
41-31/ 64-86-86

Credits:

Produced by the Laboratory for Experimental Surgery, M.E.M. Institute for Biomechanics; Video and animation by Patrick Doria; 3D reconstruction by A. Wallin and P. Doria; Software by A. Wallin and P. Doria.

Technical Notes:

This 3D computer animation visualizes the result of theoretical and practical surgical experiments, and will be used in educational and research videotapes.

Hardware:

VAX 11/780, Adage 3000, Ampex VPR3

Software:

Movie.BYU, In-house software

© Copyright 1989, M.E.M. Institute for Biomechanics.

7. Visualization of Brain

Contact:

Arthur W. Toga
Laboratory of Neuro
Imaging
Department of Neurology
UCLA School of Medicine
710 Westwood Plaza
Los Angeles, CA
90024-1769
(213) 206-2101

Credits:

Bradley A. Payne and Arthur W. Toga.

Technical Notes:

This tape demonstrates methods of visualizing neurobiologic data to improve doctors' understanding of brain physiology relative to its anatomy.

Hardware:

VAX 8530, Gould-DeAnza 8500 image processor, Lyon Lamb VAS, Sony BVU-950.

Software:

In-house A-buffer rendering and animation software.

© Copyright 1989, UCLA School of Medicine.

8. Volume Microscopy of Biological Structures

Contact:

Vincent Argiro
Vital Images, Inc.
107 W. Washington Ave.
Fairfield, IA 52556
(515) 472-7726

Credits:

Vincent Argiro, William Van Zandt, John Kesterson (Vital Images, Inc.); Data courtesy of Sarastro, Inc. and Bio-Rad Laboratories; Post-production by RSVP, Fairfield, IA.

Technical Notes:

This tape contains volume renderings of laser-scan confocal microscope data of various biological specimens. Real-time interactive rendering is demonstrated, followed by playback of a number of rotation series. Data was acquired using Bio-Rad MRC-500 and Sarastro Phoibos 1000 confocal microscopes.

Hardware:

Silicon Graphics 4D/120GTX

Software:

Voxel View™ 1.1 volume rendering system by Vital Images, Inc.

© Copyright 1989, Vital Images, Inc.

9. AML Total Hip System with Porocoat

Contact:

Howard Reed
Reed Productions, Inc.
P.O. Box 977
Center St. Extended
Warsaw, IN 46580
(219) 267-4199

Credits:

Art director and producer:
Howard Reed; Artists: Susan
Huguenard and Jessica Kantor.

Technical Notes:

This segment is from a
six-minute, three-screen,
animated trade show booth
exhibit.

Hardware:

IBM PC, TARGA 32, Definicon

Software:

Digital Arts 2.0 and 2.1, TIPS

*© Copyright 1989, Reed
Productions, Inc.*

10. Ray Tracing of Computed Tomograms

Contact:

Hans Peter Meinzer
Cancer Research Center
Dept. of Medical and
Biological Informatics
Im Neuenheimer Feld 280
6900 Heidelberg, FRG
06221/ 484366

Credits:

R. Schäfer, V. Heyers, F.
Saubier, Th. Wolf, H.P.
Meinzer, D. Scheppelmann, U.
Engelmann, S. Jänicke, V.M.
Runge, and M.L. Wood
(German Cancer Research
Center, Heidelberg).

Technical Notes:

3D visualization of CT and NMR
slice series using a ray tracing
algorithm. The first sequence
rotates a 3D visualization of a
CT scan of a girl's head, 256 x
256 pixels x 130 slices; skin
disappears and the skull is cut
in half to reveal that the child
suffers from a contiguous
growth of bone (thick wall of
skull).

The second sequence is of a
256 x 256 pixel x 126 slice NMR
scan of a brain with a tumor; an
oedema that surrounds the
tumor is removed.

Hardware:

IBM 3090 + vector facility,
Matrox MVP-A

Software:

In-house software written in APL
on C: APLTREE, CINEMA

*© Copyright 1989, Cancer Research
Center, Heidelberg.*

11. UNC Computer Graphics Sampler '89

Contact:

Henry Fuchs

Univ. of North Carolina at
Chapel Hill
Dept. of Computer Science
CB 3175, Sitterson Hall
Chapel Hill, NC
27599-3175
(919) 962-1911

Technical Notes:

A sampler of recent computer
graphics research at UNC.

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Carolina at Chapel Hill.

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