Visualization Graduates

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A volumetric ray tracing of an MRI human head.
A cut plane was applied to the outer skin isosurface
to reveal the internal brain isosurface. (Data courtesy of
Siemens, Princeton, N.J. Image courtesy of Rick Avila,
Lisa Sobierajski, and Arie Kaufman, State University of
New York at Stony Brook, generated using VolVis.)

This special issue of IEEE CG&A is the fourth in a series de-
voted to visualization. Articles from the three previous spe-
cial issues constitute some of the most widely read and referenced
sources in visualization. Each special issue was created in much
the same way, with similar goals and objectives. The May 1991 is-
ue built upon papers presented at the October Visualization 90
conference. The editors considered conference papers for inclu-
sion in the special issue primarily on the basis of quality of the re-
search, with secondary attention given to broad coverage of the
field and emerging new areas of visualization. Consideration was
also given to the audience reaction and quality of the presentation
at the conference. The authors were invited to submit their up-
dated and substantially revised papers for a full round of critical
evaluation and review by CG&A reviewers.

The guest editors' introductions to these special issues serve
as a chronicle of visualization's development. In the first intro-
duction, "Visualization Comes of Age," the editors mentioned
the "true believers" of yesterday, the emerging techniques of to-
day, and the tools of tomorrow. At the time of that special
issue in 1991, visualization was moving from the hype of the
1987 NSF report to becoming a bona fide area of scientific en-
deavor. In the July 1992 special issue, the guest editors discussed
trends and progress in visualization and drew our attention to
the emerging use of virtual reality. They also noted the in-
volvedment of other senses in data analysis, hinting at the ex-
tended concept of "realization." The introduction of July 1993
was titled "The Visualization Revolution." Here the guest ed-
itors discussed the impact that visualization has had on several
areas of science, engineering, medicine, and commerce. They
also noted the symbiosis and reciprocal impact that visualization
has had on its foundation topics of computer graphics, user in-
terfaces, image processing, computer vision, signal processing,
and computer-aided design.

Visualization today

So what is the status of visualization today? It is viable, suc-
cessful, and expanding. Using the metaphor of life, we could
say that visualization has just graduated from high school and is
going off to college. Despite the success already achieved, the
real challenges and contributions lie in the future. Visualization
must leave the security of its supporting disciplines and
branch off on its own.

We are delighted to announce that the IEEE Computer So-
ciety Board of Governors recently approved a new journal:
Transactions on Visualization and Computer Graphics (TVCG).
This journal will appear quarterly, with its premiere issue sched-
uled for early 1995. These annual special issues based on the
Visualization conference will now appear in the new transac-
tions. TVCG will not compete with CG&A; rather, the two pub-
llications will work to complement each other's mission. TVCG
will publish archival papers in visualization and computer graph-
ics research, with an emphasis on visualization. CG&A will con-
tinue with its magazine format, serving the entire computer
graphics community and bridging the gap between theory and
practice.

For a sampling of current research topics and emerging top-
ics in visualization, take a look through this special issue. It fol-
lows in the same tradition as its predecessors, containing articles
that cover new techniques and interesting applications that ex-
and the definition and scope of visualization.
Acknowledgments

This series of special issues has added considerably to the successful development and growth of visualization and has been a catalyst in the formation of TVCG. We owe a debt of gratitude to many who made this series possible. The first “visioneer” who saw promise in this area and was willing to support it was CG&A editor-in-chief John Staudhammer. The present editor in chief, Peter Wilson, has been an energetic supporter whose efforts are greatly appreciated. The continuing aid of managing editor Nancy Hays for these activities also needs to be acknowledged. She has attended all of the Visualization conferences and has written reports for CG&A about them.

We also acknowledge the IEEE Computer Society Technical Committee on Computer Graphics, which inspired and sponsored the annual Visualization conference series and the corresponding series of CG&A special issues on visualization.

References


Gregory M. Nielson is a professor at Arizona State University, where he teaches and does research in computer graphics, computer-aided geometric design, and scientific visualization. He is one of the founders, and serves on the steering committee for, the IEEE Computer Society-sponsored conference series on visualization. He is currently a director of the IEEE Computer Society Technical Committee on Computer Graphics and serves on the editorial boards of several professional journals, including IEEE CG&A. He is associate editor in chief of the IEEE Transactions on Visualization and Computer Graphics (TVCG). His current research interests include interactive curve and surface design, data visualization, and scattered data modeling. Nielson received his PhD from the University of Utah in 1970.

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Arie E. Kaufman is a Leading Professor of Computer Science and the director of the Cube project for volume visualization at the State University of New York at Stony Brook. He is the first editor in chief of IEEE TVCG. He has conducted research and consulted in computer graphics for over 20 years, specializing in volume visualization; graphics architectures, algorithms, and languages; 3D user interfaces; and multimedia.

Kaufman received a BS in mathematics and physics from Hebrew University of Jerusalem in 1969, an MS in computer science from the Weizmann Institute of Science, Rehovot, in 1973, and a PhD in computer science from Ben-Gurion University, Israel, in 1977.

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