# The 2004 Visualization Career Award

## Bill Lorensen

The 2004 Visualization Career Award goes to Bill Lorensen, General Electric Global Research, in recognition of pioneering achievements in object modeling and visualization.

Bill is one of the founders of computer visualization with seminal work in contouring and isosurface extraction, polygonal model simplification, polygonal model clipping, swept volumes, flow visualization, and object oriented design. His 1987 paper "Marching Cubes: A High Resolution 3D Surface Construction Algorithm," co-authored with Harvey Cline, is the most cited publication in computer graphics. The IEEE VGTC is pleased to recognize with this award Bill Lorensen's contributions as pioneer, leader, and source of inspiration for the visualization community.

**Bill Lorensen**
General Electric

Award Recipient 2004

## Biography

Bill Lorensen is a Graphics Engineer in the Visualization and Computer Vision Lab at GE Global Research in Niskyuna, NY. He received a BS in Mathematics in 1968 and an MS in Computer Science in 1971 both from Rensselaer Polytechnic Institute, Troy, NY.

Bill began his professional career in 1968 as a Research Mathematician at the US Army Watervliet Arsenal. From the beginning, Bill was attracted to computer graphics and its application to science and engineering. His early work involved finite element pre- and post-processing. He developed software for mesh generation, surface and contour display. Bill developed a finite element pre- and post-processing system called the Interactive Graphics Finite Element System. In 1978, Bill moved to GE's corporate research lab in Niskayuna, NY. He continued his finite element work and expanded into molecular modeling and display. In 1982 Bill began a collaboration with Harvey Cline, a physicist at GE. Their initial work focused on 3D reconstruction of microsopic surfaces using moiré imaging. In 1984, Bill and Harvey discovered an innovative algorithm to construct 3D models from medical cross-section data. The Marching Cubes algorithm, published at SIGGRAPH in 1987, has become the defacto standard for isosurface generation. Bill and Harvey, with Sieg Ludke, also created the Dividing Cubes algorithm, a point-cased surface construction algorithm. Also in 1984, Bill began using object-oriented software techniques to solve complex scientific visualization problems. The Visage system developed with Will Schroeder and others at GE, used OO techniques to build a scientific visualization system. With other GE colleagues, Bill wrote the textbook, "Object-Oriented Modeling and Design," Prentice Hall, 1991. Will Schroeder and Bill also authored one of the first papers on triangle decimation, presented at SIGGRAPH 1992. In 1997, Bill, Will and Ken Martin wrote the textbook "The Visualization Toolkit, An Object-Oriented Approach to 3D Graphics" accompanied by the open source toolkit, vtk.

Bill is the author or co-author of over 60 technical articles. He holds thirty US patents on medical and visualization algorithms. In 1991, Bill was named a Coolidge Fellow, the highest scientific honor at GE Research.

## Award Information

The IEEE VGTC Visualization Career Award was established in 2004. It is given every year to an individual to honor that person's lifetime contribution to visualization. VGTC members may nominate individuals for the Visualization Career Award by contacting the awards chair, John Staudhammer, at http://tab.computer.org/vgtc/.