The 2006 Visualization Career Award

Pat Hanrahan

This 2006 Visualization Career Award goes to Pat Hanrahan, Stanford University, in recognition of his work in numerous areas of visualization.

In the 1980s, Pat Hanrahan and his colleagues at PIXAR developed the basic algorithms that form the foundation of modern volume rendering software widely used in scientific, engineering and medical visualization. Since then he and his students at Princeton and Stanford have developed scalable graphics and visualization software that is widely used throughout the world, including WireGL, Chromium, and Tableau, one the most successful systems in information visualization. Most recently, he helped Jim Thomas at PNNL formulate a research agenda in Visual Analytics, which has led to the formation of the National Visualization and Analytics Center. Pat Hanrahan has succeeded throughout his career to inspire others to explore the most important intellectual issues at the core of visualization. The IEEE VGTC is pleased to award Pat Hanrahan the 2006 Visualization Career Award.

Pat Hanrahan

Standford University

Award Recipient 2006

Biography

Pat Hanrahan began his studies at the University of Wisconsin in Nuclear Engineering and then switched to Biophysics. His graduate work started as a project to model the motornervous system of Ascaris Lumbricoides, a nematode related to, but not as well-known as its famous cousin Caenorhabditis Elegans. Simulating, visualizing, and understanding this wave sparked his interest in scientific computing, geometric modeling, computer graphics, and visualization.

In order to learn more about computer graphics, Pat accepted a position at the New York Institute of Technology. While there he developed geometric modeling tools and computer animation software. Eventually he led the 3D animation group, and it was there that he was exposed to all areas of computer graphics from animation to modeling to rendering to imaging.

After working at NYIT, he returned to the University of Wisconsin and received his PhD degree for his thesis on "Topological Shape Representations." Next he briefly worked at the Digital Systems Research Center, before accepting a position at PIXAR as software manager for the PIXAR image computer.

His first major project at PIXAR was to enhance the volume rendering software that had been developed by Robert Drebin and Loren Carpenter. At PIXAR he was the Chief Architect of the RenderMan Interface, a protocol for specifying scenes to realistic rendering systems. In 1989, Pat left PIXAR and accepted a faculty position at Princeton. Later in 1994, he joined the faculty at Stanford University.

Many of the projects he has undertaken with his colleagues focus on visualization. He was a principal investigator of the Geometry Center, an NSF Science and Technology Center. He worked with Wolfgang Krueger and Bernd Froehlich on the Responsive Workbench, a tabletop virtual reality display device. Tamara Munzner helped establish much of the visualization research at Stanford by co-writing a major grant to develop visualization software for complex systems. Chris Stolte and Diane Tang developed Polaris, which has been commercialized by Tableau Software. Maneesh Agrawala, Julie Heiser, Barbara Tverksy, and Pat developed methods for automatically creating assembly instructions. He has collaborated with many researchers at the Department of Energy to develop scalable graphics and visualization software. His students Greg Humphreys and Ian Buck developed WireGL and Chromium, a successful open source project, which is widely used at advanced visualization facilities throughout the world. Most recently, he helped Jim Thomas at PNNL formulate a research agenda in Visual Analytics that has led to the formation of the National Visualization and Analytics Center, including five regional university centers.

Pat has also participated in the IEEE Visualization Conference in many ways, but perhaps most notable are his keynotes and capstone talks. Many of these talks touched topics at the interface between visualization and other disciplines. For example, in his talk "To Draw a Tree," he explored the historical development of different depictions of abstract trees; in his talk "Modern Trompe L'oeil" he discussed artistic attempts to "fool the eye" and drew parallels with virtual reality technology; and in his most recent talk "Self-Illustrating Phenomena" he examined visual representations produced by scientists in the process of making great discoveries, and discussed how tool builders in the visualization community can build better systems to support the scientific method. Visualization is a fascinating topic, and Pat has tried throughout his career to inspire others to explore the most important intellectual issues at its core.

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, Bill Lorensen, at http://tab.computer.org/vgtc/.