

Advanced Visualization Instrumentation

Abstract: Increasingly, the Nation's computational science and engineering research communities work with international collaborators to tackle complex global problems. Just as cyberinfrastructure provides better access to greater volumes and varieties of data – from data storage systems, online instrumentation and/or major computational resources – advanced visualization instruments serve as the eyepieces of a *telescope or microscope*, enabling research teams and their students to view their data in cyberspace, and better manage the increased scale and complexity of accessing and analyzing the data.

The presentation provides an overview of the current state-of-the-art in Advanced Visualization Instrumentation, the middleware used to drive them, and how they are being used to advance science and education.

Bio: Jason Leigh is the Director of LAVA: the Laboratory for Advanced Visualization & applications, and Professor of Information & Computer Sciences at the University of Hawai'i at Mānoa. He is also Director Emeritus of the Electronic Visualization Lab and the Software Technologies Research Center at the University of Illinois at Chicago, where he maintains appointments in the Computer Science and Communications departments. In the past he has also held research appointments at Argonne National Laboratory, and the National Center for Supercomputing Applications.

His research expertise includes: Big data visualization; virtual reality; high performance networking; and video game design. He is co-inventor of the CAVE2 Hybrid Reality Environment, and SAGE: Scalable Adaptive Graphics Environment software, which has been licensed to Mechdyne Corporation & Vadiza Corporation, respectively. In 2010 he initiated a new multi-disciplinary area of research called Human Augmentics - which refers to the study of technologies for expanding the capabilities and characteristics of humans.

His research has also received numerous press from News media including: the AP News, New York Times, Popular Science's Future Of, Nova ScienceNow, NSF Science Now, PBS, and Forbes. Leigh also teaches classes in Software Design and he has been teaching Video Game Design for over 10 years. In 2010 his video game design class enabled the University of Illinois at Chicago to be ranked among the top 50 video game programs in US and Canada.