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Making Direct Manipulation Work in Virtual Reality

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SIGGRAPH '97
Course #30

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Speakers:

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Course Description

Direct manipulation interfaces are becoming increasingly important in the design of useful virtual reality applications. Yet direct manipulation interfaces are difficult to implement well due to poor interface hardware performance and poor understanding of human factors. This course will cover the issues that arise in the design of direct manipulation interfaces for virtual reality applications. Human factors, tracker error compensation, and widget design will be discussed from the perspective of task performance, with a stress on application design.

Speaker Biographies

Steve Bryson is a research scientist with MRJ Technology Solutions, working under contract for the Data Analysis Branch of the Numerical Aerodynamic Simulation Systems Division at NASA Ames Research Center. He does research in the application of virtual reality techniques for scientific visualization, of which the virtual windtunnel is the main focus. Steve Bryson started in the virtual reality field in 1984 at VPL Research, working on a graphics based programming environment using the prototype dataglove for input. Later he was involved in work on the Dataglove model II. Mr. Bryson then joined Scott Fisher's VIEW lab at NASA Ames Research Center in 1987, where he was involved in integrating the various I/O and graphics systems into a virtual environment. This included research in software architectures for virtual reality systems and human factors. Mr. Bryson has served on the National Academy of Sciences/National Research Council Committee on Virtual Reality Research and Development. He was co-chair of the IEEE Symposium on Research Frontiers in Virtual Reality, program co-chair of the IEEE Virtual Reality Annual International Symposium '95, and general chair of the IEEE Virtual Reality Annual International Symposium '96.

Ronald Azuma is a Research Staff Member at Hughes Research Laboratories. He completed his Ph.D. at the University of North Carolina at Chapel Hill in February 1995. While at UNC, he helped design and implement a scalable optical head tracker that was demonstrated in the Tomorrow's Realities gallery at SIGGRAPH '91. His dissertation research investigated the use of prediction to reduce registration errors in Augmented Reality displays. He published two papers on this subject in SIGGRAPH '94 and '95. At SIGGRAPH '95 he also gave an introduction to Augmented Reality in the "Developing Advanced Virtual Reality Applications" course. His current research interests include augmented and virtual environments, human-computer interfaces, and visualization.

Andrew Forsberg is a member of the research staff of the Computer Graphics Group at Brown University directed by Dr. Andries van Dam. He joined the group in May 1996 after receiving his masters degree at Brown and works mainly on 3D graphics systems research and user interface design for both desktop and VR applications. His work has been published at the User Interface and Software Technology (UIST) conference and the Symposium on 3D Interactive Graphics.

Neff Walker received his Ph.D. in psychology from Columbia University in 1983. Since that time he has been an assistant professor at the American University of Beirut and a visiting assistant professor at the University of Michigan. He is currently an assistant professor in engineering psychology at the Georgia Institute of Technology. His research interests are in the areas of training, human performance, and performance in virtual environments

Course Schedule

1:30 - 2:00	Introduction (Steve Bryson)
2:00 - 2:45	Human Factors (Neff Walker)
2:45 - 3:00	Registration (Ronald Azuma)
3:00 - 3:15	Break
3:15 - 3:30	Registration (Continued) (Ronald Azuma)
3:30 - 3:45	Correcting for Static Error (Steve Bryson)
3:45 - 4:30	Correcting for Dynamic Error (Ronald Azuma)
4:30 - 5:00	Widget Design (Andrew Forsberg)

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