The 2014 Virtual Reality Career Award

Steve Feiner

The 2014 Virtual Reality Career Award goes to Steve Feiner of Columbia University, in recognition of his lifetime contributions to augmented reality and virtual reality, including seminal research on mobile augmented reality, automated design and layout, and applications to task assistance and navigation. Since 1989, Steve Feiner and his students have developed novel virtual reality and augmented reality interaction techniques and systems. His research has addressed multivariate data visualization; coordinated use of head-worn displays with wall-mounted, desk-top, and hand-held displays; automated design of augmentations that meet task goals and occlusion constraints; and experimental applications to a diverse set of fields, including tourism, journalism, archaeology, construction, field guides, and maintenance, repair, and assembly. The IEEE VGTC is pleased to award Steve Feiner the 2014 Virtual Reality Career Award.

BIOGRAPHY

Steve Feiner is Professor of Computer Science at Columbia University, where he directs the Computer Graphics and User Interfaces Lab, and co-directs the Columbia Vision and Graphics Center. He received a PhD in Computer Science from Brown University on automated generation of explanatory 3D graphics, advised by Andy van Dam. Steve started his faculty career at Columbia University in 1985, and by 1989 was working with PhD student Cliff Beshers to explore multivariate data visualization in desktop VR, using a stereo monitor and DataGlove. The following year, Steve began to develop his first AR system: an X11 window manager that embedded a small flat panel display within a large virtual information surround of 2D windows, viewed on a head-tracked, custom-built, monocular, optical see-through HWD. In 1991, with funding from an ONR Young Investigator Award, Steve and his PhD students, Dorée Seligmann and Blair MacIntyre, combined Dorée’s earlier work on a rule-based system that designed pictures explaining maintenance tasks with new software developed by Blair for their HWD. The result was KARMA (Knowledge-based Augmented Reality for Maintenance Assistance), which dynamically synthesized adaptive, animated AR instructions for performing simple end-user maintenance of a laser printer.


Excited about the potential for outdoor AR, in 1996, Steve, Blair, and PhD student Tobias Höllerer, created the first backpack-based mobile AR system using differential GPS to track the wearer’s position and an IMU to track the orientation of a see-through HWD. Working with colleague Tony Webster, their “Touring Machine” allowed a user to walk around campus, viewing overlaid information about buildings and departments, streamed from an experimental wireless network. Later generations of his lab’s indoor and outdoor AR systems would support automated layout of augmentations, multimedia news stories intertwined with the environment, “hybrid user interfaces” that combined HWDs with other complementary display technologies, multimodal interaction, building construction, equipment assembly, games, and authoring tools, much of it funded by ONR, working with Larry Rosenblum’s NRL VR Lab, and NSF. Steve and his students are currently exploring urban information visualization using HWDs in concert with tabletop and hand-held displays; task assistance for collaborating users, both co-located and remote; and techniques for transitioning among viewpoints in AR.

Steve is coauthor of two editions of Computer Graphics: Principles and Practice, and was elected to the CHI Academy in 2011. Together with his students, he has won the ACM UIST Lasting Impact Award in 2010 for work on supporting head-fixed, body-fixed, and world-fixed 2D windows in wearable AR and hypertextually linking them to real-world objects, and best paper awards from ACM UIST, ACM CHI, ACM VRST, and IEEE ISMAR. Recently, Steve has been program co-chair for IEEE Virtual Reality 2012 and for Foundations of Digital Games 2012, a papers subcommittee co-chair for ACM CHI 2013–2014, and doctoral symposium chair for ACM UIST 2009–2012, and is on the editorial advisory board for Computers & Graphics, and an associate editor of ACM Transactions on Computer–Human Interaction.