The 2014 VGTC Virtual Reality Technical Achievement Award

Doug A. Bowman

The 2014 Virtual Reality Technical Achievement Award goes to Doug A. Bowman of the Center for Human-Computer Interaction at Virginia Tech, USA, in recognition of research and design achievements that have significantly advanced knowledge in the fields of 3D user interfaces and virtual reality. Professor Bowman's work on 3D UIs has resulted in both important interaction technique designs and a deep understanding of principles and guidelines for designing effective 3D spatial interfaces. He has also contributed significantly to the theory and practice of VR through his research on the effects of fidelity on the effectiveness of VR systems. His work has profoundly influenced the way that 3D UIs and VR systems are characterized and designed. The IEEE VGTC is pleased to present Doug A. Bowman with the 2014 Virtual Reality Technical Achievement Award.

Doug A. Bowman
Virginia Tech
Award Recipient 2014

Doug A. Bowman is Professor of Computer Science and Director of the Center for Human-Computer Interaction at Virginia Tech. He earned his M.S. (1997) and Ph.D. (1999) in Computer Science from the College of Computing at Georgia Tech, where he studied with Dr. Larry F. Hodges in the Graphics, Visualization, and Usability Center. He received a B.S. in Mathematics and Computer Science in 1994 from Emory University.

As a graduate student at Georgia Tech, Doug was one of the first to broadly study the design and evaluation of 3D interaction techniques for immersive VR systems. His seminal Ph.D. dissertation research resulted in highly usable interaction technique designs (such as the HOMER manipulation technique), theoretical frameworks for understanding 3D UIs (including identification of the "universal" 3D interaction tasks and taxonomies of techniques), and empirical findings on the relative performance of various 3D interaction metaphors. Much of this knowledge was collected in the widely cited book 3D User Interfaces: Theory and Practice, which Doug co-authored with Ernst Kruijff, Joe LaViola, and Ivan Poupyrev.

As a faculty member at Virginia Tech for the last 15 years, Doug has continued to study 3D UIs with his students in the 3D interaction group. 3D UI projects in his lab have included new interaction techniques (e.g., rapMenu, SQUAD), software toolkits for 3D UI development, and applications of 3D UIs in domains such as engineering, scientific visualization, architecture, and entertainment. Teams from the 3D interaction group were awarded first prize in the IEEE 3DUI contest each year 2010-2012.

His research has also been motivated by the potential of immersive VR systems to provide measurable benefits to users. A fundamental research question is, "What level of fidelity (immersion) do VR systems need in order to realize significant benefits?" With his students and colleagues, he has performed dozens of empirical studies to determine the effects of various components of fidelity on task performance, learning, engage-ment, and other measures of interest. This knowledge is now being collected in the VR knowledgebase, an online repository of empirical findings for the VR research community. A key collaborator in this work has been Dr. Tobias Höllerer of the University of California, Santa Barbara, where Doug spent a sabbatical year in 2008-2009.

Doug's research has been published widely in peer-reviewed journals and conferences, and he is one of the most-cited authors in the fields of VR and 3D UIs. He was awarded a National Science Foundation CAREER grant for his work on domain-specific 3D UIs, and has received additional funding from NSF, the Office of Naval Research, and DARPA, among others. He was named a Distinguished Scientist by the ACM in 2010. He has served as program chair and general chair of the IEEE Virtual Reality conference, and was one of the founding co-chairs of the IEEE Symposium on 3D User Interfaces. He now serves on the steering committees of both events.

Award Information

The IEEE VGTC Virtual Reality Technical Achievement Award was established in 2005. It is given every year to recognize an individual for a seminal technical achievement in virtual and augmented reality. VGTC members may nominate individuals for the Virtual Reality Technical Achievement Award by contacting Arie E. Kaufman at vgtcvr-awards@vgtc.org

For more information, please visit https://research.cs.vt.edu/3di/user/123.