Augmented Reality as the Future of Personal Computing

Personal computing went through a revolution just over a decade ago with the introduction of the smartphone. In this talk, I will argue that we are on the cusp of another huge change in the way we consume and interact with information—that augmented reality (AR) has the potential to replace not only our smartphones, but also our tablets, our desktops, and our TVs. With its ability to deploy virtual content anywhere, integrated seamlessly with our view of the real world, AR can give us the information we want anytime, anywhere. But there are many research challenges to address before this vision can become a reality. Of course, the technology needs to get better. At the same time, though, we must also design effective methods for interacting with and managing AR content, and we must understand the effects of always-on AR on individuals and societies.

Immersive Analytics Beyond Visualization

Analyzing big data for actionable insights is one of today’s critical challenges in computing. Neither human analysts nor automated algorithms alone have the ability to extract subtle signal properties from very large datasets. Visualization of large datasets in virtual reality (VR) or augmented reality (AR) can help analysts spot trends and outliers, but visualization by itself is not sufficient (even in VR). In this talk, I will review research on the benefits of immersion for data analysis, and effective interaction methods for VR/AR. I will contrast immersive analytics with traditional visualization, and propose the concept of Immersive Space to Think (IST) to harness augmented reality’s potential to cope with big data, and its ability to engage human intellect in analyzing it. In IST, human analysts can make virtual and augmented reality (VR and AR) data sets more compelling, and I will describe a broad research agenda to learn how to design effective IST systems, and to gather evidence of the benefits of the IST approach.

Speaker Biography

Douglas A. Bowman is the Frank J. Maher Professor of Computer Science and Director of the Center for Human-Computer Interaction at Virginia Tech. He is the principal investigator of the 3D Interaction Group, focusing on the topics of three-dimensional user interface design and the benefits of immersion in virtual environments. Dr. Bowman is one of the co-authors of 3D User Interfaces: Theory and Practice. He has served in many roles for the IEEE Virtual Reality Conference, including program chair, general chair, and steering committee chair. He was co-founder of the 3DUI Symposium on 3D User Interfaces (now part of IEEE VR) and the 3D User Interfaces Symposium. He received a CAREER award from the National Science Foundation for his work on 3D Interaction, and has been named as an ACM Distinguished Visitor. Dr. Bowman received the Technical Achievement award from the IEEE Visualization and Graphics Technical Committee in 2014. He received his B.S. in computer science from Georgia Institute of Technology, and his M.S. and Ph.D. in computer science from the Georgia Institute of Technology.