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Short Course Title

Virtual and Augmented Reality: Towards Lifelike Immersive Experiences

Abstract

With rapid advances in related technologies in the recent years, state-of-the-art virtual and augmented reality devices are increasingly blurring the border between the real and the virtual worlds. In this tutorial, we will examine the system-level requirements from cognitive neuroscience and human-factors considerations, review the advances in positional and motion tracking with visual-inertial sensing, perceptual computing and 3D-graphics processing techniques, spatial-light modulation and display technologies, and end-to-end system architectures towards the ultimate goal of achieving lifelike immersive and interactive applications and experiences.

Speaker Biography

Dr. Achin Bhowmik is the chief technology officer and executive vice president of engineering at Starkey Hearing Technologies, a privately-held medical devices business with more than 5,000 employees and operations in more than 100 countries worldwide. In this role, he is responsible for overseeing the company's technology, product development and engineering departments, and is leading the drive to redefine medical wearable devices with advanced sensors and artificial intelligence technologies.

Prior to joining Starkey, Dr. Bhowmik was vice president and general manager of the Perceptual Computing Group at Intel Corporation. There, he was responsible for the R&D, engineering, operations, and businesses in the areas of 3D sensing and interactive computing, computer vision and artificial intelligence, autonomous robots and drones, and immersive virtual and merged reality devices. Previously, he served as the chief of staff of the Personal Computing Group, Intel's largest business unit with >\$30B annual revenues in 2010.

As an adjunct professor and guest lecturer, Dr. Bhowmik advises graduate research and teaches courses on human-computer interactions and perceptual computing technologies at the University of California, Berkeley, Stanford University, Liquid Crystal Institute of the Kent State University, Kyung Hee University, Seoul, and the Indian Institute of Technology, Gandhinagar.

Dr. Bhowmik was elected a Fellow of the Society for Information Display (SID). He serves on the board of advisors for the Fung Institute for Engineering Leadership at UC Berkeley, the executive board for SID, and the board of directors for OpenCV. He also serves on the board of directors and advisors for several technology startup companies. He received the Industrial Distinguished Leader Award from the Asia-Pacific Signal and Information Processing Association. He has over 200 publications, including two books and 34 issued patents.