北京大学前沿计算研究中心
Center on Frontiers of Computing Studies, Peking University

静园5号院
前 沿 讲 座
2019年第06号

Perceptual Display: Towards Reducing Gaps Between Real World and Displayed Scenes

Karol Myszkowski

Department： Computer Graphics
Max-Planck-Institut für Informatik

Host：陈宝权 教授
2019年5月10日 星期五 16:00
北京大学静园五院204

Abstract

In this talk, we refer to the selected properties of human visual perception, which can be used to improve the perceived image quality, often without a need for enhancing physical display parameters. First, we demonstrate how to display image details which go beyond the physical resolution of display devices and we investigate the impact of image framerate on the perception of hold-type blur and judder. Second, we focus on perceived depth and improvement of viewing comfort on stereoscopic and multiscopic displays by exploiting complex interactions between monocular depth cues (such as motion parallax) and binocular vision. Third, we discuss gaze-driven depth manipulations to enhance perceived scene depth, and we present our predictor for saccade landing position which significantly reduces undesired effects of inherent system latency in foveated rendering applications. Finally, we discuss the role of eye lens accommodation and we present a prototype stereoscopic display that can reproduce this important visual cue for a realistic viewing experience.

Biography

Karol Myszkowski is a senior researcher at the MPI Informatik, Saarbruecken, Germany. In the period from 1993 till 2000 he served as an associate professor in the Department of Computer Software at the University of Aizu, Japan. In the period from 1986 till 1992 he worked for Integra, Inc. a Japan-based, company specialized in developing rendering and global illumination software. He received his PhD (1991) and habilitation (2001) degrees in computer science from Warsaw University of Technology (Poland). In 2011 he was awarded with a lifetime professor title by the President of Poland. His research interests include global illumination and rendering, perception issues in graphics, high dynamic range imaging, and stereo 3D. He co-authored the book High Dynamic Range Imaging, and participated in various committees and editorial boards. He also co-chaired Rendering Symposium in 2001, ACM Symposium on Applied Perception in Graphics and Visualization in 2008, Spring Conference on Computer Graphics 2008, and Graphicon 2012.