Robust SFM and SLAM in Challenging Environments

Abstract: Although SFM and SLAM have achieved great success in the past decade, some critical issues are not adequately addressed, which greatly restrict their applications in practice. For example, how to efficiently obtain long and accurate feature tracks and close complex loops for multiple sequences? How to efficiently perform global bundle adjustment for large datasets with limited memory space? How to perform robust SLAM in dynamic environments? How to handle fast motion and strong rotation? In this talk, I will introduce our recent works for addressing these key issues. A live AR demo on a mobile device and a set of applications will be presented.

BIO: Dr. Guofeng Zhang now is an Associate Professor at State Key Lab of CAD&CG, Zhejiang University. He received his BS and Ph.D degrees in Computer Science from Zhejiang University, in 2003 and 2009, respectively. Currently, he is a visiting scholar at Robotics Institute of CMU, working with Michael Kaess and Martial Hebert. His research interests include structure-from-motion, SLAM, 3D reconstruction, augmented reality, video segmentation and editing. He has published 20 papers in the major journals (TPAMI, TIP, TVCG, TMM, CVIU) and conferences (ICCV, CVPR, ECCV, ISMAR) in computer vision, graphics and augmented/mixed reality areas. Based on these research achievements, the group he led has successfully developed several systems about SFM/SLAM and 3D Reconstruction, such as ACTS, LS-ACTS, RDSLAM and RKSLAM, which can be downloaded from the ZJUCVG group website http://www.zjucvg.net.