NATIONAL UNIVERSITY OF SINGAPORE

School of Computing

C S S E M I N A R

Title: **Motion Aware Motion Invariance**

Speaker: Dr Scott McCloskey
              Research Scientist
              Honeywell ACS Labs

Date/Time: 10 September 2015, Thursday, 01:00 PM to 02:30 PM

Venue: MR6, AS6-05-10

Chaired by: Dr Brown, Michael Scott, Associate Professor, School of Computing
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Abstract:

This talk addresses the capture of sharp images of moving objects using a computational photographic technique known as motion invariance, and summarizes recent papers from the European Conference on Computer Vision (ECCV) and International Conference on Computational Photography (ICCP). Motion Invariance is a method to capture an image from which fine details of moving objects can be recovered without a priori information or estimation of the object's speed. Whereas previous implementations of motion invariance require expensive custom hardware and/or reduce light throughput of the system, we demonstrate an implementation using the stabilizing element of an off-the-shelf DSLR lens which maintains high light throughput. This is used as a platform to explore the use of partial motion information during image capture and processing. We show that coarse knowledge of the motion direction leads to changes in the lens motion, that simultaneous motion of the camera can be compensated, and most surprisingly that the velocity of moving objects can be estimated from artifacts in a first processed image, all leading to higher quality images.

Biodata:

Scott McCloskey joined Honeywell's ACS Labs in 2007 as a Computer Vision Research Scientist, and has since served as the principle investigator for several commercial and externally-funded research projects. His research interests include computational photography, computer vision, and biometrics. Dr. McCloskey received his PhD in Computer Science from McGill University (Canada) in 2008, a MS in Computer Science from the Rochester Institute of Technology (USA) in 2002, and a BS in Computer Science and Math from the University of Wisconsin-Madison (USA) in 1998. He is the author of

several peer-reviewed conference papers including recent work at CVPR, ECCV and ICCV, and is a program chair for WACV 2016.