IMI RESEARCH SEMINAR

With Keynote Speaker

DATE: 03 November 2017, Friday

TIME: *11:00 am – 12:35 pm+

VENUE: IMI Seminar Room, Research Techno Plaza, XFrontiers, Level 03-01,

          50 Nanyang Drive, Singapore 637553

* Attendance is on first-come first-served basis due to limited seating.

+ Lunch will be served

11.00am – 11.45am

45 mins presentation including 10 mins Q&A

Keynote Speech

The Future of Computational Reality

Prof Eugene FIUME – Professor and Dean of Applied Sciences, SFU, Canada

The goal of computational reality is to synthesize virtual experiences that are visually indistinguishable from direct physical experience. I will argue in my talk that this involves scientific and technical challenges that are currently considerably beyond our understanding, capabilities, and perhaps even our competence. A deeper understanding of how humans process and interpret sense data will be required to build models of how humans construct "reality", recognising that these constructions are the products of an evolutionary process that favours survival through visual plausibility over physical accuracy. Constructing models of accuracy that can objectively tell us when a simulation is "good enough" is a fundamental problem of computer graphics that will require deep insights into human perception, psychology and anthropology. It is a surprisingly under-appreciated issue, particularly given the recent resurgence of new technologies and content for augmented and virtual reality.

About Prof Eugene FIUME

Eugene Fiume is Professor of Computing Science and Dean of the Faculty of Applied Sciences at Simon Fraser University (SFU). He is past Chair of the Department of Computer Science at the University of Toronto, and is a Fellow of the Royal Society of Canada. His research interests include most aspects of realistic computer graphics, including computer animation, modelling natural phenomena, and physical light transport. He has written two books and (co-)authored over 130 papers on these topics. His industrial interests include technology transfer for information technology, internet-based applications, digital media, and high performance graphics systems. He has been scientific advisor to many companies and institutes around the world.

11.45am – 12.15pm

30 mins presentation including 5 mins Q&A

Towards More Intelligent Machines: Understanding Human Gestures and Actions Using RGB-D Sensors

Prof Junsong YUAN – Associate Professor of EEE, NTU, Singapore

To make machines as smart as human beings, it is important for machines to understand human behaviors, e.g., their gestures and actions, so that machines can better sense the intentions of humans and communicate with them in a more natural way. Recently, the availability of commodity depth cameras, such as Microsoft Kinect and Intel RealSense, has brought a new level of excitement to this field. With these new sensors, rapid progresses have been made to enable new applications. In this talk, I will introduce our recent work for human behaviour understanding using RGB-D cameras. Applications in video surveillance, human-robot interaction, virtual reality, gaming, and tele-presence will also be discussed.

About Prof Junsong YUAN

Junsong Yuan is currently an Associate Professor at School of Electrical and Electronics Engineering (EEE), Nanyang Technological University (NTU), Singapore. He received Ph.D. from Northwestern University in 2009. He is an Associate Editor of IEEE Trans. on Image Processing (T-IP), IEEE Trans. on Circuits and Systems for Video Technology (T-CSVT) and The Visual Computer journal (TVC). He is Program Co-Chair of ICME'18 and Area Chair of CVPR'17, ICIP'17, ICPR'16, ACCV'14, etc. He received 2016 Best Paper Award from IEEE Trans. on Multimedia (T-MM), Doctoral Spotlight Award from IEEE Conf. on Computer Vision and Pattern Recognition (CVPR'09), Nanyang Assistant Professorship from NTU, and Outstanding EECS Ph.D. Thesis award from Northwestern University.

12.15pm – 12.35pm

20 mins presentation including 5 mins Q&A

AdobeBoxes: Locating Object Proposals using Object Adobes

Dr Zhiwen FANG – Research Fellow of IMI, NTU, Singapore

We propose Adobe Boxes to efficiently locate the potential objects with fewer proposals, in terms of searching the object adobes that are the salient object parts easy to be perceived. Because of the visual difference between the object and its surroundings, an object adobe obtained from the local region has a high probability to be a part of an object. Our approach comprises of three main procedures. First, the coarse object proposals are acquired by employing randomly sampled windows. Then, based on local-contrast analysis, the object adobes are identified within the enlarged bounding boxes that correspond to the coarse proposals. The final object proposals are obtained by converging the bounding boxes to tightly surround the object adobes.

About Dr Zhiwen FANG

Dr Fang received his PhD from the School of Automation, Huazhong University of Science and Technology in 2017. He is currently working as a Research Fellow at the Institute for Media Innovation (IMI), Nanyang Technological University (NTU). His research interests include object detection, object tracking, and machine learning.