

WORKSHOP 10

A half-day workshop in IC Design (Digital) and Opto-electronics

Date : 3 June 2016 (Friday)
Time : 9:30 a.m. – 1:00 p.m.
Venue : Conference Hall 1-2, G/F, Core Building 1, Phase 1, Hong Kong Science Park, Shatin, Hong Kong

Topic 1 : **Visual Computing: From High Quality Visual Content to Immersive Experience**
Speaker : **Dr Misuen Lee**, Senior Manager of IC Design Digital Technology Division, ASTRI

Topic 2 : **See Through Display Technologies and Applications of Augmented Reality (AR)**
Speaker : **Mr Kenny Chan**, Senior Manager of Opto-electronics Technology Division, ASTRI

Abstract

Topic 1: **Visual Computing: From High Quality Visual Content to Immersive Experience**

We have entered the cloud and mobile computing era. Consumers are enjoying high quality multimedia content on multiple devices, including desktop displays, smart phones, tablets, and wearables. In the near future, people will want to interact with these devices in smarter ways so as to obtain a real-time, life-like immersive experience. Emerging cross-screen applications are being propelled by visual computing, a fast-growing field that combines image and signal processing, computer graphics, virtual and augmented reality, computer vision and pattern recognition, and human-machine interface technologies.

In this talk, we will discuss several topics in the visual computing field, including highly realistic video, 3D interactions, and 360-degree video capture. To achieve highly realistic visual experience on 2D videos, human visual system analysis and depth of sense enhancement technologies are required in combination of super-resolution reconstruction. To allow users to control virtual objects in real-world 3D space, computer graphics, motion sensing and holographic display technologies must be integrated effectively in 3D interaction systems. To capture seamless 360-degree panoramic video in real-time, efficient solution that can handle ghosting and lens distortions are required. We will introduce ASTRI's research on these topics, as well as our solutions for 4KTV, video production, 360 degree camera, and a number of entertainment and professional applications.

Topic 2: **See Through Display Technologies and Applications of Augmented Reality (AR)**

See through display technologies are widely applied to wearable, automotive applications and even extend to signage for advertisement. Before Google introduced its glasses in 2013, most fancy stuffs in this area we knew are from movies, such as large see through display wall in *Minority Report* (2002), boys' dream toy – AR helmet in *Iron Man* (2008); situation has been changed a lot since Microsoft launched its AR (augment reality) glass - HoloLens and Magic Leap introduced its unique MR (mixed reality) glass and invested by Google and Alibaba valued the company at \$1.2bn.

In this talk, we're going to discuss see through projection based display technologies in 3 different applications – wearable, automotive and advertisement; including market update, existing technical challenges and their market opportunities. We'd also introduce ASTRI display + sensing technology platform solution from device packaging, projection module design to system integration.

Biographies

Dr Misuen Lee, Michelle, is currently a Senior Manager of IC Design Digital Technology Division of ASTRI. She has over 17 years experience in developing intelligent products for professional and consumer applications, including smart digital signage, critical infrastructure protection, facility management, hands-free video conferencing, and home automation. Prior to joining ASTRI, Michelle co-founded ActivEye in 2002, a pioneering company in the area of automated video surveillance. When ActivEye was acquired by Honeywell Security Group in 2007, she became an Engineering Fellow of Honeywell. Prior to ActivEye, Michelle served as a Senior Member of Research Staff at Philips Research USA.

Dr Lee received her Ph.D. degree in computer science from the University of Southern California. She has over 20 publications in journals and conferences, including a book, *A Computational Framework for Segmentation and Grouping*. Michelle holds 21 patents, with 4 additional patents pending, in the areas of computer vision, image processing, and human-machine interactions.

Mr Kenny Chan, is a Senior Manager of the Intelligent Projection Systems team in Manufacturing Technologies Group, ASTRI. Kenny received his MSC of EE from the Chinese University of Hong Kong in 2000 and his MBA from the Hong Kong University of Science and Technology in 2008. Kenny has 17 years of industry experience in display and sensing fields, covering R&D, project management, technology commercialization and sales marketing. After joining ASTRI in 2008, Kenny successfully contributed to the spun-off case of the world's smallest optical anti-shaking camera module. In recent years, his team has successfully developed several world leading pico projection technology solutions, such as the world's first single lens dual panel 3D pico projector, the world's first single camera based depth sensing projector with the former winning China National Awards in 2008 and 2012 and HKICT Gold Award 2012 and 2014 (Best Lifestyle). In 2015, ASTRI-TRULY Joint R&D center is setup with his support.

Before joining ASTRI, Kenny has worked in Epson Group for 10 years. He was department head of Epson Hong Kong and Epson China during his service to the company, and has been working on new technology commercialization, product sales & marketing, and project management.