



### Seminar Announcement

December 12th, 2016 - DIET Room 206, 10:15 a.m.

# Computational Models for Visual Attention

**Speaker: Prof. Weisi Lin**

**Abstract:** Human visual attention (VA) is a result of million-year human evolution. It refers to the cognitive process of selectively concentrating on certain visual aspects in a scene that are most interesting (e.g., we pay more attention to a beautiful flower which appears among green leaves in a picture), and has attracted continuous research effort since William James' time. It is beneficial to model VA computationally and incorporate appropriate models in signal evaluation and processing, since the human is the final receiver and appreciator for most such processed signals, and the scarce system resource is better to be utilized in user-centric manners. In addition, there is an increasing need for harmonious human-machine interaction (imagining that robots act as caregivers of senior citizens and salespersons in a future shopping mall), and therefore it would be good if such machines possess similar attention mechanisms as humans. Furthermore, VA is effective and efficient, so its computational emulation enables technical advantages in system design (like fast target identification). In this talk, we will first introduce the problems associated with VA, as well as the relevant physiological and psychological ground. Afterward, we are to discuss the principle of computational VA modelling and the recent advances in the area, including the bottom-up and top-down approaches. Meaningful applications in perceptual quality assessment, image retargeting, video coding, computer graphics, and target identification, as well as industrial deployment, are then demonstrated. The talk will also present our opinions toward possible future research and development.

**Bio:** Weisi Lin obtained his PhD from King's College, London University, and is an active researcher in image processing, video compression, quality metrics and perceptual modeling of visual signals, and multimedia communication. He served as the head of the Visual Processing Lab in Institute for Infocomm Research (I<sup>2</sup>R), Singapore. He is currently an Associate Professor, School of Computer Science and Engineering, Nanyang Technological University. He published 170 international journal papers, 230+ conference papers, 2 authored books, 3 edited books, 9 book chapters and 7 patents. He has been elected as a Distinguished Lecturer for IEEE Circuits and Systems Society (2016-2017), and Asia-Pacific Signal and Information Processing Association (2012-13), and given keynote/invited/tutorial/panel talks to over 20 international conferences. He is an AE for IEEE Trans. on Image Processing, IEEE Trans. Circuits and Systems for Video Technology, IEEE Signal Processing Letters and Journal of Visual Communication and Image Representation, and a past AE for IEEE Trans. on Multimedia. He has been elected as a Fellow of IEEE and IET. He believes that good theory is practical, and has kept a balance of academic research and industrial deployment throughout his working life.