

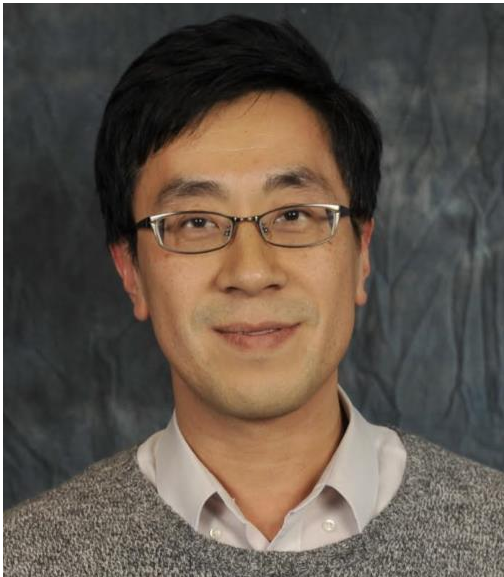
## Deep Learning Based Signal Processing for Video Analytic

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### **Abstract:**

In this talk we present our works on an integrated signal processing system including segmentation, object detection, tracking and recognition for video analytic. The proposed deep learning based system can process multiple sensory information and the system uses sensor registration, data association and fusion to combine sensory information. Deep learning is employed at different components of this system to enhance the signal processing performance and its adaptability to the environment. Based on the analytic results, the system can recommend decision. If the uncertainty is high, actions including resource allocation, planning will be used to extract or reassess the sensory information to get a recommended decision with lower uncertainty. This talk will focus on the use of deep learning to sensor registration, object detection and recognition.

### **Short Bio:**



Henry Leung is a professor of the Department of Electrical and Computer Engineering of the University of Calgary. Before joining U of C, he was with the Department of National Defence (DND) of Canada as a defence scientist. His main duty there was to conduct research and development of automated surveillance systems, which can perform detection, tracking, identification and data fusion automatically as a decision aid for military operators. His current research interests include big data analytic, chaos and nonlinear dynamics, information fusion, machine learning, signal and image processing, robotics and internet of things. He has published extensively in the open literature on these topics. He has over 300 journal papers and 250 refereed conference papers. Dr. Leung has been the topic editor on “Robotic Sensors” of the International Journal of Advanced

Robotic Systems and the associate editor of various journals such as the IEEE Circuits and Systems Magazine, International Journal on Information Fusion, Sensor Journal, IEICE Trans. Nonlinear Theory and its Applications, Aerospace Systems, IEEE Trans. Aerospace and Electronic Systems, IEEE Signal Processing Letters, IEEE Trans. Circuits and Systems. He has also served as guest editors for various special issues such as “Intelligent Transportation Systems” for the International Journal on Information Fusion and “Cognitive Sensor Networks” for the IEEE Sensor Journal. He is the editor of the Springer book series on “Information Fusion and Data Science”. He is a Fellow of IEEE and SPIE.