

## *The 16<sup>th</sup> Hosei University IIST Colloquium*

This colloquium invites Prof. Timothy K. Shih and Prof. Wen-June Wang from National Central University, Taiwan. Prof. Timothy K. Shih is a Distinguished Professor and the Vice Dean of College of EECS. Prof. Wen-June Wang is a Chair Professor of Department of Electrical Engineering and the Provost (Dean of Academic Affairs). They will give two talks titled “Development of a Guiding Device for the Blind People” and “From Finger Tracking and Gesture Interpretation to Motion Understanding”.

Date and Time: 13:30-15:30 Nov. 26, 2019

日時: 2019 年 11 月 26 日 13:30-15:30

Venue: Multimedia Hall, Hosei University Koganei Campus  
3-7-2 Kajiono cho, Koganei City, Tokyo 184-8584 JAPAN

会場: 法政大学, 小金井キャンパス, 西館マルチメディアホール

Host: Hosei University IIST: Institute of Integrated Science and Technology  
Hosei University Global Education Center

主催: 法政大学 IIST (総合理工学インスティテュート)

共催: 法政大学グローバル教育センター



## **Title: Development of a Guiding Device for the Blind People**

Lecturer: Wen-June Wang, Chair Professor Provost (Dean of Academic Affairs), National Central University, Taiwan

### Abstract:

We are developing an integrated system to facilitate visually impaired people in daily activities. The system will ensure that users have both safe outdoor activities and convenient indoor actions. Using Deep Learning technologies, our team is designing and implementing a navigation device, whether it is wearable or carried via a robot, to help visually impaired persons to travel on the road, recognize around environment and communicate with the device. In this talk, a few important issues will be addressed, which include the implementation of the guiding robot, visual system for finding obstacles and their distances, navigation assistant, street information recognition system, natural language dialog, indoor supporting system for dangerous signs. The talk will include a few video demonstrations to show our implemented system.

### Biography:



Wen-June Wang received his Ph.D. degree in the Institute of Electronics from National Chiao-Tung University of Taiwan in 1987. Prof. Wang is presently a Chair Professor of Department of Electrical Engineering and the Provost (Dean of Academic Affairs), National Central University. He was the Dean of College of Electrical Engineering and Computer Science, National Central University, Taoyuan City, Taiwan. He was also a Chair Professor and the Dean of the Research and Development Office of National Taipei University of Technology, Taiwan in 2007~2009. In 2005~2007, he was the Dean of College of Science and Technology, National Chi-Nan University, Nan-Tou, Taiwan. He was a visiting scholar for one year in the Department of Mechanical Engineering, Georgia Institute of Technology, USA in 1994 and a half year at the University of Louisville, Kentucky, USA, from September 2016 to February 2017. Moreover, Prof. Wang obtained the honor of IEEE Fellow in 2008 and IFSA Fellow in 2016. Prof. Wang has authored or coauthored over 175 refereed journal papers and 172 conference papers in the areas of fuzzy systems and theorems, robust and nonlinear control in large scale systems, and neural networks etc. His most significant contributions are the design of fuzzy systems and the development of robotics. His other research interests include the areas of robot control, neural networks, artificial intelligent, and pattern recognition etc.

## **Title: From Finger Tracking and Gesture Interpretation to Motion Understanding**

Lecturer: Timothy K. Shih, Distinguished Professor, Vice Dean, College of Electronic Engineering & Computer Science Director, Innovative AI Research Center  
National Central University, Taiwan

### Abstract:

Video sensors are powerful devices which can make Human-Computer Interaction intuitive and efficient. The fundamental techniques include tracking postures and gestures based on RGB and Depth information. With the recent development of Deep Learning models, precise finger tracking and understanding the meanings of human gestures further make HCI techniques more powerful. This talk starts from illustrating some basic features of device raw data. Feature selection and noise removal methods are discussed. A few important Deep Learning modules are then presented. These models are based on 3D CNN, GRU, and LSTM, with a few newly proposed methods. The talk demonstrates a few interesting projects such as virtual musical instruments, virtual puppet show, gesture for interactive TV, virtual keyboard, and 3D in air hand writing.

### Biography:



Timothy K. Shih is a Distinguished Professor and the Vice Dean of College of EECS at the National Central University, Taiwan. He is also the Director of Innovative AI Research Center. He was the Dean of the College of Computer Science, Asia University, Taiwan and the Chairman of the CSIE Department at Tamkang University, Taiwan. Prof. Shih is a Fellow of the Institution of Engineering and Technology (IET). He was also the founding Chairman Emeritus of the IET Taipei Local Network. In addition, he is a senior member of ACM and a senior member of IEEE. He was the founder and co-editor-in-chief of the International Journal of Distance Education Technologies, USA. He is the Associate Editor of IEEE Computing Now. And, he was the associate editors of the IEEE Transactions on Learning Technologies, the ACM Transactions on Internet Technology, and the IEEE Transactions on Multimedia. Prof. Shih was the Conference Co-Chair of the 2004 IEEE International Conference on Multimedia and Expo (ICME'2004). Prof. Shih has received research awards from National Science Council of Taiwan, IIAS research award from Germany, HSSS award from Greece, Brandon Hall award from USA, and the 2015 Google MOOC Focused Research Award. Professor Shih was named the 2014 Outstanding Alumnus by Santa Clara University.