UC San Diego
JACOBS SCHOOL OF ENGINEERING
NanoEngineering

UC San Diego NanoEngineering Seminar

Tuesday, February 20, 2018
11:00a.m.
Fung Auditorium

"*Intelligent Sensors for Cyber Physical Human Systems*"

Wen Jung Li
Chair Professor of Biomedical Eng., Dept. of Mechanical and Biomedical Eng., City University of Hong Kong
Vice President, Shenzhen Academy of Robotics, China

Abstract: *Cyber Physical Human Systems* (CPHS) research explores advanced technologies and novel theories in the integration of sensing, actuation, communication, and computing platforms, including robots, sensors, and wireless networks, for advancing human capabilities and improving human lives. CPHS will enable the development of transformative systems that interact with humans through multiple modalities such as audio, motion, smell, tactility, brain-machine interface, and other new interaction techniques. CPHS will also broaden the advancements of human capabilities in several realms, including accessing the micro/nano worlds (e.g., single-cell analysis and nano-scale manufacturing), operating in dangerous or inaccessible environments (e.g., monitoring gigantic structures, firefighting, and deep-sea exploration), and improving medical technologies (e.g., rapid drug discovery and ubiquitous healthcare monitoring/delivery). This lecture presents our team's development of several intelligent sensing and actuation platforms, based on micro/nano technologies, which will enhance diverse CPHS applications spanning from drug discovery to multi-dimensional interactive technologies. These platforms include mobile human air-bag system, injectable sensors for tracking animal social behavior, wearable sensors for athletes' skill assessment (e.g., volleyball and badminton players), palpation robotic-figures for Chinese medicine applications, micro scent generator for digital entertainment, and optically-induced electrokinetics for single-cell big data analysis.

Biosketch: Wen J. Li (BSc/MSc, Univ. of Southern California; PhD, UCLA) is Chair Professor of Biomedical Engineering in the Dept. of Mechanical and Biomedical Engineering of the City University of Hong Kong (CityU), and concurrently serving as the Vice President of the Shenzhen Academy of Robotics, China. He served as the President of the IEEE Nanotechnology Council in 2016 and 2017. Prior to joining CityU, he was with The Chinese University of Hong Kong (CUHK; 1997-2011), where he headed the Centre for Micro and Nano Systems. He held research positions at the NASA/CalTech Jet Propulsion Laboratory (Pasadena, CA), The Aerospace Corporation (El Segundo, CA), and Silicon Microstructures (Fremont, CA) before moving to Hong Kong in 1997. His team has published more than 300 technical papers related to MEMS/nanotechnology/robotics and received best conference/student paper awards from well-known conferences such as IEEE-ICRA, IEEE/ASME AIM, IEEE-ROBIO, and IEEE-NANO in the past 15 years. Dr. Li served as the founding Editor-in-Chief of the *IEEE Nanotechnology Magazine* (2007 to 2013) and is an Editorial Board Member of *Scientific Reports*. Dr. Li has co-founded 2 startup companies with his former students (in Hong Kong and China) which are currently commercializing MEMS and nano-sensor related products worldwide. He was elected IEEE Fellow in 2010 and ASME Fellow in 2011; he is also a Distinguished Overseas Scholar of the Chinese Academy of Sciences.