



**THE CHINESE UNIVERSITY OF HONG KONG**  
Department of Information Engineering  
*Seminar*

**Intelligent and Connected Systems  
for Sensible Urban Living**

by

**Prof. Xiaofan (Fred) Jiang**  
Electrical Engineering and Computer Engineering  
Columbia University

**Date : 13 March, 2018 (Tue.)**  
**Time : 11:00am – 12:00noon**  
**Venue : Room 833, Ho Sin Hang Engineering Building**  
**The Chinese University of Hong Kong**

Abstract

Analyzing observations of the physical world can be a messy process. But the rise of intelligent and connected sensors to measure energy consumption, air quality, ocean temperatures, urban noises, and any number of other changes is allowing us to study our urban environment and take actions like never before. In this talk, I will discuss several recent projects that use intelligent sensor systems and data analytics to better understand the physical world and improve our daily lives. In one, we create ePrints -- a system that tracks each occupant's personal share of energy use, or "energy footprint", inside commercial building environments, and provides insights to occupants on the real-time energy impact of their actions. ePrints supports different apportionment policies, with  $\mu$ s-level footprint computation time and graceful scaling with size of building, frequency of energy updates, and rate of occupant location changes. In another project, we create PAWS -- an ultra-low-power wearable system that uses multi-channel audio sensors embedded in a headset, combined with machine learning in the smartphone, to help detect, classify, locate, and warn pedestrians of dangers from nearby vehicles.

Biography

Dr. Xiaofan (Fred) Jiang is an assistant professor in electrical engineering and computer engineering at Columbia University and co-Chair of Smart Cities Center at the Data Science Institute. Prof. Jiang received his Ph.D. in 2010 in Computer Science from UC Berkeley. He has been working on wireless embedded systems and smart buildings for the past 14 years. In 2008, he led one of the earliest projects in IP-based smart-buildings, paving the way for an information revolution in the building industry. At Microsoft Research, he developed a magnetic-based indoor localization system with an accuracy and consistency that is significantly better than the state of art. At Intel Labs, he led a team to create a city-scale air quality monitoring system which has been commercialized and deployed at scale in Beijing. His recent work on low-power wearable systems demonstrated the potential of wearables for urban safety. He is actively serving on several technical and organizing committees including ACM SenSys, ACM/IEEE IPSN, and ACM BuildSys. He has 6 US patents and published over 30 peer-reviewed papers, including Best Paper at IPSN '05, Best Demo at SenSys '11, Best Poster at BuildSys '16, and Best Paper Runner-Up at BuildSys '17.

**\*\* ALL ARE WELCOME \*\***