



THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering
Seminar

**Double-Edged Side-Channels through Mobile Sensing:
Cyber Attack and Defense**
by
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Date : 31st January, 2019 (Thu)
Time : 11:30am – 12:30pm
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

Rich sensors on mobile and wearable devices nowadays could offer valuable data about us. These data recently are revealed as a double-edged sword, as they could form side-channels to leak (or attack) aspects of user's information that is considered vital. On the other hand, there are also great potentials to develop novel side-channel formed countermeasures to further effectively defend these risks. In this talk, two concrete cyber attack and defense studies will be introduced. In the first study, we show that with a novel mobile sensing side-channel design, we can effectively prevent the case that when a personal card, such as door entrance and transportation cards, gets lost or stolen, it will be used illegally by the adversaries. In the second study, we show that the sensitive information, like passwords and personal data, frequently typed by user on mobile devices can be inferred through a context-free side-channel (without knowing the keyboard information) formed by the motion sensors of wearable devices on user's wrist, while this attack can be further defended by another novel side-channel, adopting a different channel "frequency", i.e., sensor, in the design. In summary, this talk aims to discuss the double-edged sides of mobile sensing intersecting with the cyber-security domain. It can alarm people the potential security risks when using the mobile sensing services, and it could also provide effective solutions to overcome these issues.

Biography

Zhenjiang Li is an Assistant Professor in the computer science department at City University of Hong Kong, Hong Kong. He received the B.E. degree in computer science and technology from Xi'an Jiaotong University, Xi'an, China, in 2007 and the M.Phil. degree in electronic and computer engineering and the Ph.D. degree in computer science and engineering from The Hong Kong University of Science and Technology, Hong Kong, in 2009 and 2012, respectively. He has served as the TPC members for highly refereed conferences such as IEEE INFOCOM'16~19, ICDCS'19, etc. and received the IEEE INFOCOM distinguished TPC award from 2016 to 2018. His research interests include wearable and mobile sensing, cyber security, wireless and distributed computing.

**** ALL ARE WELCOME ****

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