Other - Colloquium on Artificial Intelligence Research and Optimization

Secure Onboarding for IoT Devices: Challenges and Emerging Solutions

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Digital Media Center Theatre/Zoom
September 19, 2022 - 03:30 pm

Abstract:

ZOOM INFO:

Webinar ID: 927 6041 9250
Passcode: 116287

IoT (Internet of Things) devices are becoming ubiquitous, and are enabling automation in both businesses, homes and city infrastructure. Many such devices are internet-enabled, and increasingly are connected via cellular networks. Onboarding of such devices remains an issue. Onboarding is the process of connecting a new or reconditioned device to a network. Onboarding is a critical aspect of enabling remote device management. IoT devices unfortunately are difficult to onboard, oftentimes due to a lack of intuitive user interface and limited processing capabilities. Therefore many device vendors have tried to streamline the process to allow for device onboarding upon first power-up with little to no user intervention ("zero-touch onboarding"). However, if the onboarding process is not secure then the devices themselves can be vulnerable to compromise. Depending on the application, this in turn can lead to more than just financial loss given the increasing use of IoT devices in critical operations such as smart city infrastructure or medicine. This talk will discuss the technical challenges in enabling secure IoT device onboarding, and will also provide an overview of recent approaches to solve these problems.

Speaker's Bio:

Dr. Giridhar D. (Giri) Mandyam is the Chief Security Architect for all IoT products that Qualcomm produces. He has also worked at Rockwell International, Texas Instruments and Nokia. He is currently the Chair of the IoT Working Group in the Fast Identity Online (FIDO) Alliance. He was Chair of the S34-3 Ad Hoc Group on Presentation Logic and Service Frameworks for the Advanced Television Systems Committee (ATSC) and was a key contributor in development of the ATSC 3.0 specification. Moreover he was Qualcomm's Advisory Committee representative to the Worldwide Web Consortium (W3C), he has served as Chair of the W3C Geolocation Working Group. Dr. Mandyam is inventor or co-inventor of more than 50 issued US patents, and was recognized in 2017 by Qualcomm with the IP Achievement Award. He has also published over 80 conference and journal papers, and 5 book chapters. He is a co-author of the text Third-Generation CDMA Systems for Enhanced Data Services (Academic Press, 2002). He is a Senior Member of the IEEE and has been a member of the editorial board of the IEEE Transactions on Wireless Communications.

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