School of Computer Science and Engineering Presentation

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Cyber-security in Smart Manufacturing Systems

Abstract: The world is increasingly connected through a series of smart and connected systems such as smart home systems, radio-frequency identification (RFID) networks, and the emerging “smart” manufacturing systems. While leading to improved services, such monitoring and manufacturing also introduce new security challenges. To address these challenges, in contrast to existing mechanisms and architectures that are mostly separative, my research aims at developing efficient algorithms and techniques that can systematically discover, analyze, and mitigate new security problems in smart manufacturing systems.

In this talk, I will introduce my most recent work about cyber-security in smart manufacturing systems. We studied security problems in both operator and factory sides. On the operator side, we performed integration of virtual machine into smart manufacturing, which imposes strong demands such as detecting cyber-attacks, reducing overhead, and saving resources. On the factory side, we investigated two problems including the real-time communication and data collision avoidance problems. Our proposed algorithms to solve these problems have been utilized to help the system efficiently avoid cascading failure and data collisions in the factory.