Science of Security for Cyber-Physical Systems Workshop

Submitted by awitesell on Fri, 01/15/2016 - 1:47pm

Apr 11, 2016 8:30 am - 5:00 pm CEST

SoSCYPS Workshop is held in conjunction with CPS Week 2016
Date: April 11, 2016
Location: Vienna, Austria

Registration and travel information can be found at the CPS Week website.

Attacks infiltrating the integrity of vehicular control systems and medical devices have brought to sharp focus the urgency of securing cyber-physical systems. There is a broader discussion about the role of principled security-aware design and analysis in the development of both modern engineering systems such as the Smartgrid as well as in future systems that use advanced AI and machine learning in safety-critical settings. Although there has been a growing interest in these security in the CPSWeek community (increasing number of security related papers in ICCPS, HSCC, RTAS, HyCons), this body of research remains largely disconnected from the mainstream systems security research (USENIX, Oakland, CCS, NDSS). The CPS community has developed analysis and synthesis algorithms, verification tools, notions of observability and controllability, and have been in the forefront of research on emerging applications. The connections between this body of work and systems security research remain unexplored.

The goal of this workshop is to advance the science of security in cyberphysical systems by helping bridge this. We plan to bring together the leaders from these two communities in a full day workshop of invited sessions and panel discussions. Instead of unstructured technical presentations, the speakers and participants will put their research in the context of some broad topics that will help us bridge this gap. Topics of interest will include:

- Identify hard open problems for academic research in CPS security
- Data and testbeds in security research amenable to CPS methods
- Success and fails in designing for resiliency
- Identify CPS tools and techniques (e.g., verification, synthesis) that can advance systems security research
- How to make an impact with CPS security research (where most systems are closed, design cycles are long, and methodologies are slower to change than in cyber systems)
- Metrics for CPS security
Program:

9:00 - 9:05
Introduction

9:05 - 9:45
Secure State-estimation and Control of Cyber-Physical Systems
Paulo Tabuada, Professor, Electrical Engineering Department, University of California, Los Angeles

9:45 - 10:30
Accountability in Cyberphysical Systems
Anupam Datta, Associate Professor, Computer Science Department and Electrical and Computer Engineering Department, Carnegie Mellon University

10:30 - 11:00
Coffee Break

11:00 - 11:45
Advances and Challenges of Quantitative Verification for CPS
Marta Kwiatkowska, Professor of Computing Systems, University of Oxford

11:45 - 12:30
A Set-theoretic Approach for Secure and Resilient Control of Cyber-Physical Systems
Bruno Sinopoli, Associate Professor, Electrical and Computer Engineering Department, Carnegie Mellon University

12:30 - 14:00
Lunch Break

14:00 - 14:45
From Control System Security Indices to Attack Identifiability
Henrik Sandberg, Professor, Department of Automatic Control, KTH Royal Institute of Technology

14:45 - 15:30
Towards Foundational Verification of Cyber-physical Systems
Gregory Malecha, Postdoctoral Scholar, Computer Science and Engineering, University of California, San Diego
Sorin Lerner, Professor, Computer Science and Engineering, University of California, San Diego

15:30 - 16:00
Coffee Break

16:00 - 16:45
Security Games on Flow Networks: Structural Results and Practical Implications
Saurabh Amin, Robert N. Noyce Career Development Assistant Professor,
Department of Civil and Environmental Engineering, Massachusetts Institute of Technology

16:45 - 17:30
Panel

Organizers:

Sayan Mitra, University of Illinois at Urbana-Champaign (mitras@illinois.edu)
Geir Dullerud, University of Illinois at Urbana-Champaign (dullerud@illinois.edu)

Sponsorship:

NSA Science of Security (SoS) Lablet at the University of Illinois at Urbana-Champaign.

Event Details

Location: Vienna, Austria
URL: http://publish.illinois.edu/science-of-security-lablet/science-of-security-for-c...

Spotlight Slideshow Link: http://publish.illinois.edu/science-of-security-lablet/science-of-security-for-c...

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