

SEMINAR NOTICE:



Execution Monitoring Enforcing Information Flow Properties in Cyber-Physical Systems

Thoshitha Gamage

PhD Candidate in Computer Science
at the Missouri University of
Science and Technology

Abstract:

Fundamentally, inherently observable events in Cyber-Physical Systems with the tight coupling between cyber and physical components can result in a confidentiality violation. By observing how the physical elements react to cyber commands, adversaries can identify critical links in the system and force the cyber control algorithm to make erroneous decisions. This presentation describes recent advances in developing a theory of information flow security specifically geared towards preserving the event confidentiality in Cyber-Physical Systems. The far-reaching objective of this research is to develop a science of self-obfuscating systems based on the composition of simple building blocks. A model of Nondeducibility composes the building blocks under Information Flow Security Properties. To this end, this work presents fundamental theories on external observability for basic regular networks and the novel concept of “event compensation” that can enforce Information Flow Security Properties at runtime.

Biosketch:

Thoshitha Gamage is a PhD Candidate in Computer Science at the Missouri University of Science and Technology, Rolla, MO. His primary research interest is in the area of computer security and its intersection with formal methods, distributed systems, and cross-disciplinary architectures. For his doctoral research, Thoshitha worked on developing a foundation for information flow security in cyber-physical systems (CPS). Thoshitha holds a Master’s degree in Computer Science from the St. Cloud State University, St. Cloud, MN and a bachelor’s degree in Computer Engineering from the University of Peradeniya, Sri Lanka. Thoshitha defended his Ph.D. Dissertation entitled “CEEME: Compensating Events based EM Enforcement for Cyber-Physical Systems” on October 28th, 2011 and is awaiting formal graduation in December 2011.

TIME & LOCATION:

Illinois:

**Wednesday, November 16 at 7:30 p.m.
Coordinated Science Lab - Room 238
ADSC Videoconference Room**

Singapore:

**Thursday, November 17 at 9:30 a.m.
@ ADSC - Level 8, Fusionopolis,
Connexis North**