

UVA Education Initiatives Related to UMS

Sharable Cybersecurity Laboratory for Physical Systems

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UVA Technology Leaders Undergraduate Program

- Started in 2008, with NSF grant support
- 3 Departments – Systems, Mechanical and Computer Engineering
- Undergrad minor that addresses cyber physical system design and evaluation
- Grown from 13 students to 85 student
- Planning for expansion
 - Adding Civil Engineering (Critical Infrastructure Systems)
 - Addressing Cybersecurity of physical systems

Cybersecurity Laboratory Concept

- Supports student hands-on efforts regarding attacks and defenses for a variety of cyber physical systems
- On location, low cost, control system electronics and SW
 - Controllers
 - Sensors
 - Communications
 - Attack Electronics
 - Defense Electronics
- Externally supported (cloud-based) simulations of the “rest of the physical system” responding to the control system (under attack and defended)

Planned Business Higher Education Forum/UVa Physical System Cybersec Lab Project (1 of 2)

- BHEF interest in curriculum and Certificates for emergent areas of technology, such as cybersec for physical systems
- UVa research efforts developing prototype solutions for existing physical systems
 - UAV
 - Automobile
 - 3D Printer
 - Army Fire Control System

Planned Business Higher Education Forum/UVa Physical System Cybersec Lab Project (2 of 2)

- UVa to lead development of a prototype sharable laboratory
- With technical support from BHEF companies, establish two Industry/University sub-groups to develop lab
 - Design and development of use cases
 - Supporting curriculum for the use cases
- Apply the laboratory to UVa's TLP program
- Provide needed information to other organizations who wish to start employing initial use cases
- Consider broader use scalability approaches

Current Status and Plans

- Look to start project by end of April/early May
- UVa and BHEF have been planning for organization of the two sub-groups and developing the prototyping team
- Expect initial prototypes in 6-9 months and initial classroom use shortly thereafter
- Based on initial outcomes, alternative approaches will be considered for scaling the laboratory concept for broad use