

Challenge:

- •CPS targeted by malicious attacks
- •Goal of cyber-resilience: ensure safety and performance even after system is compromised

Solution:

- •Safe, real-time control under attacks using CBFs
- •Game-theoretic models and algorithms for planning and synthesis
- Composition for largescale, distributed synthesis

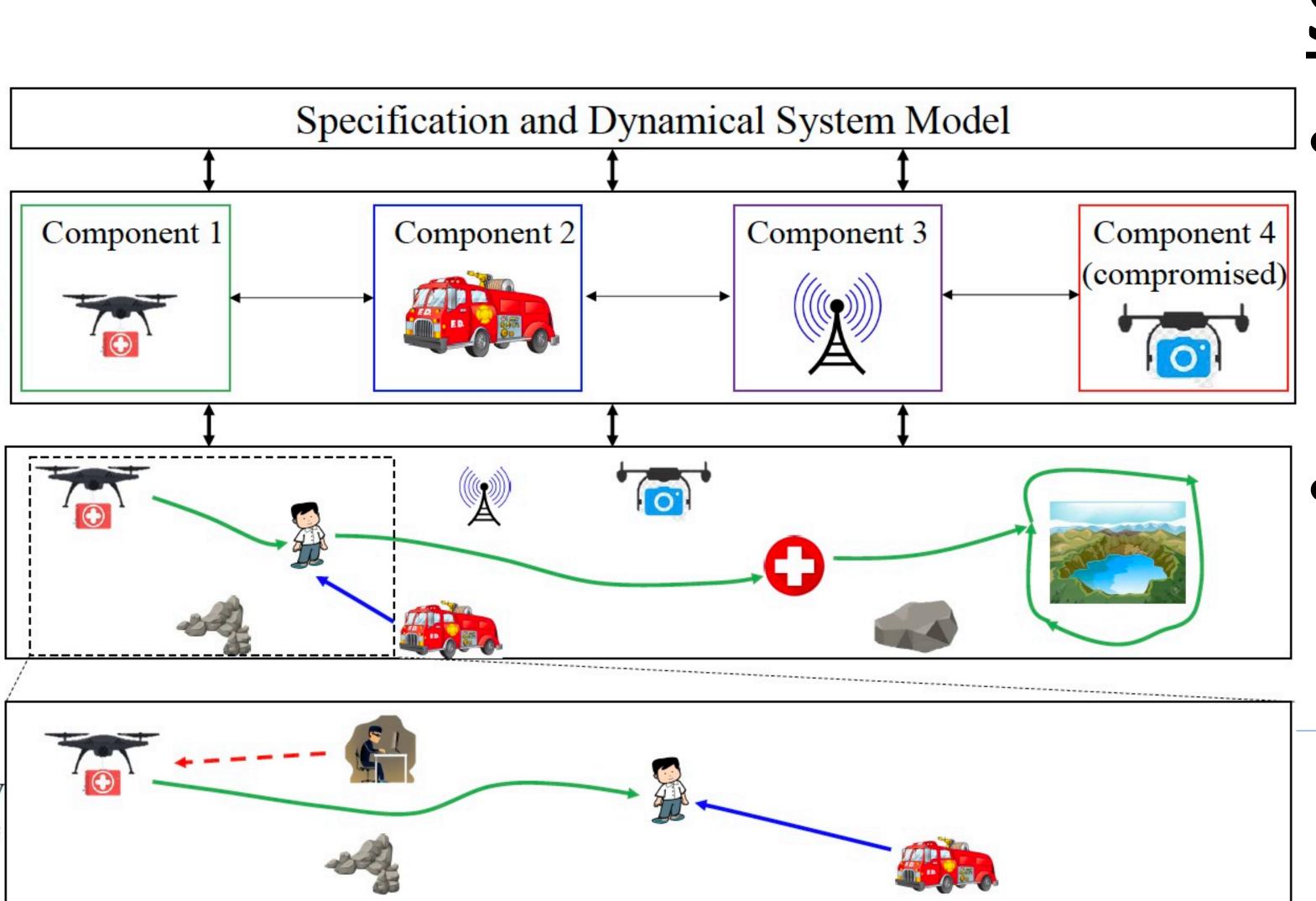
Award #1941670 Worcester Polytechnic Institute (WPI) Email: aclark@wpi.edu

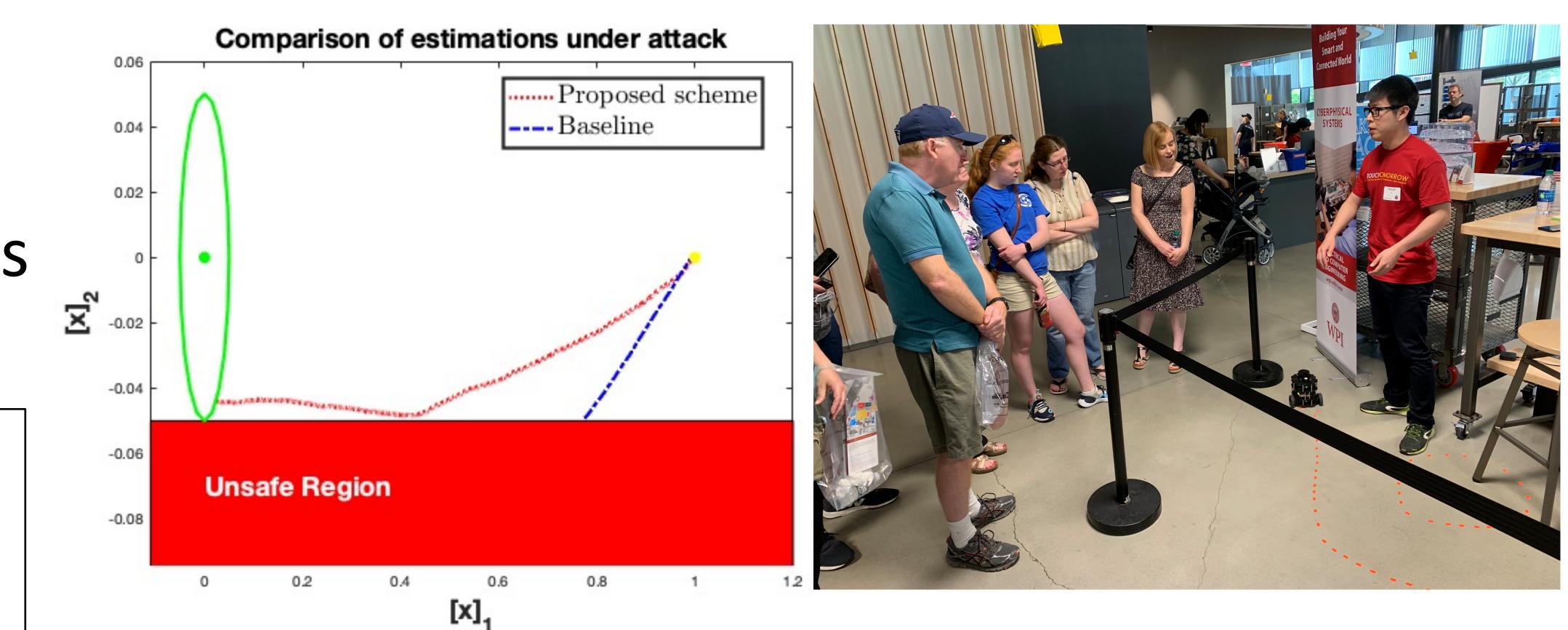
CAREER: Synthesis and Control of Cyber-Resilient CPS Award #1941670; PI: Andrew Clark, Dept. of Electrical and Computer Engineering, WPI. Email: aclark@wpi.edu

Composition Distributed Synthesis Enforceable Contracts

> **Higher-Level** Synthesis **Resilient Abstraction** Game-Theoretic Synthesis Submodularity

Resilient Control Safety and Reachability Modeling Compromise and DoS





Scientific Impact:

- •New algorithms for scalable and verifiable resilient control
- Models of the impacts of attacks
- •Enhance safety of unmanned vehicles, industrial control systems, smart buildings,... Implement project
- projects

Broader Impact:

- outcomes through capstone
- •HS and community outreach