Security of Cyber-Physical Systems

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Who am I?

My name is:

Rouhi

- Second year PhD student
- Embedded Systems Labs
- Linköping University, Sweden

Current-Research

Security of Cyber-Physical Systems (CPS)

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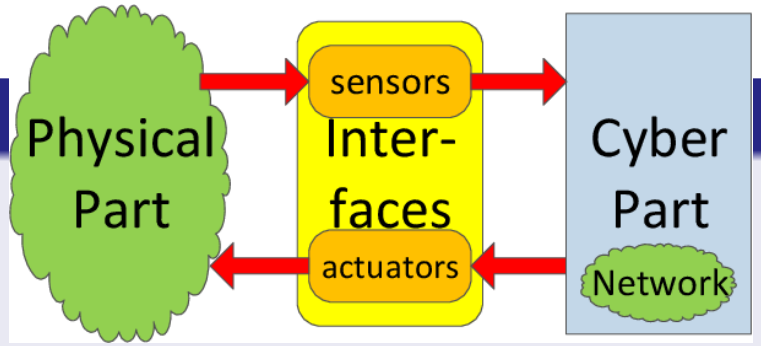
Security of Cyber-Physical Systems (CPS)

Characteristics of a CPS:

- Safety critical systems
- Real-time systems
- Resource constrained



Current-Research

Security of Cyber-Physical Systems (CPS)

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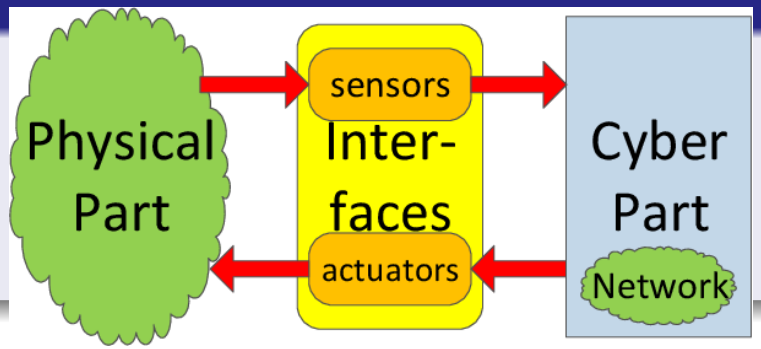
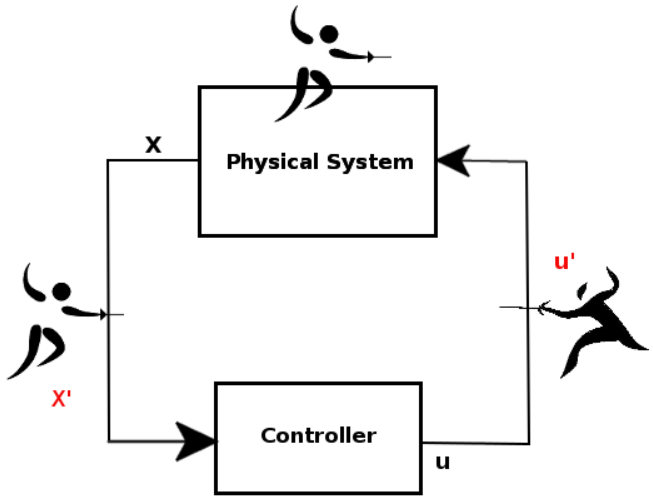


Intention

Considering new attacks to CPS, proposing methods to detect and mitigate these attacks.

Current-Research

Detecting packet manipulation attacks in Control Systems



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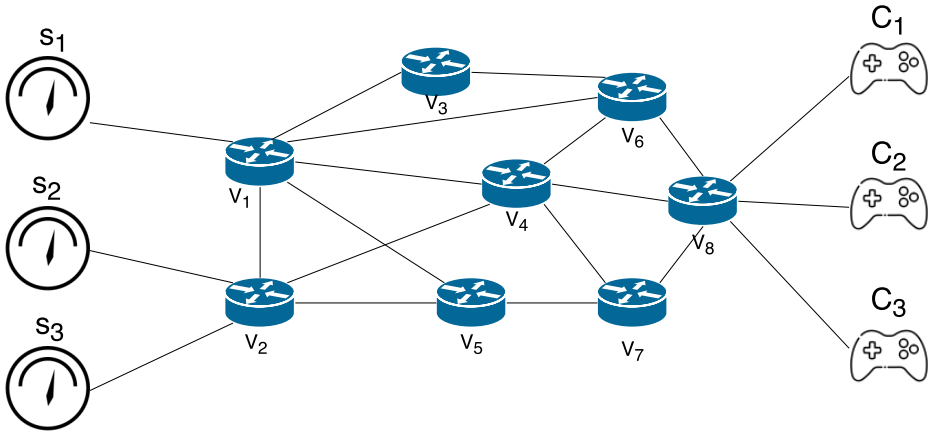
Key Ideas:

- Use physical system model to learn normal behavior
- Detect anomalies using the expected model
- Allocate more resource to mitigate the attacker

Current-Research

Mitigating jitter attacks in a networked control system



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Key Ideas:

- Robustly schedule messages
- Find best route when a message is delayed
- Provide real-time compatible encryption and authentication for sensors and controllers

Past-Research

Research areas

- Modern Cryptography
- Functional Encryption
- Attribute Based Encryption (ABE)

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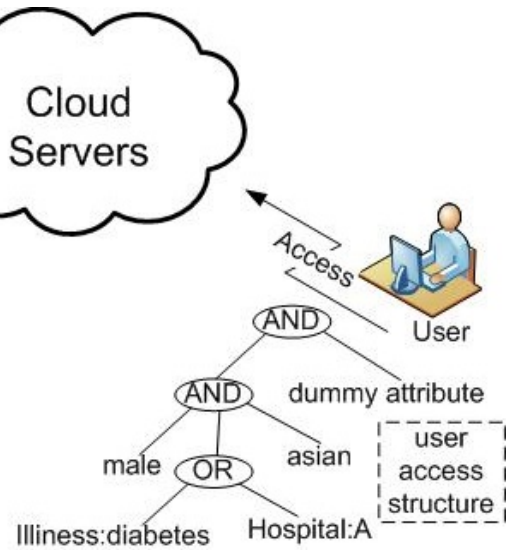
Using ABE to apply fine-grained access control



Future-Research

Cryptography

- Light-weight encryption
- Hardware based encryption

Cyber-Physical Systems

- Resource constrained
- Real-time systems

Future-Research

Why I am here!

- Update my knowledge in state of the art cryptography research
- Find connections and chances for further collaborations