

# CPS: synergy: collaborative research: Support for security and safety of programmable IoT systems

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## Objectives

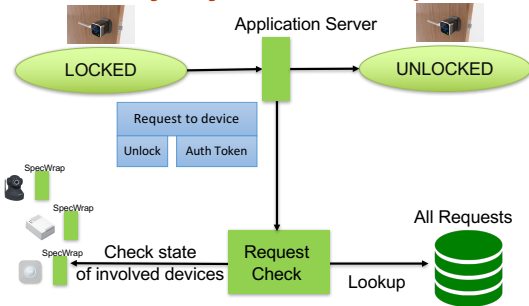
Detect and prevent bugs in IoT applications. Risks:

- IoT device failures and compromises
- Attacks on other devices in an IoT network

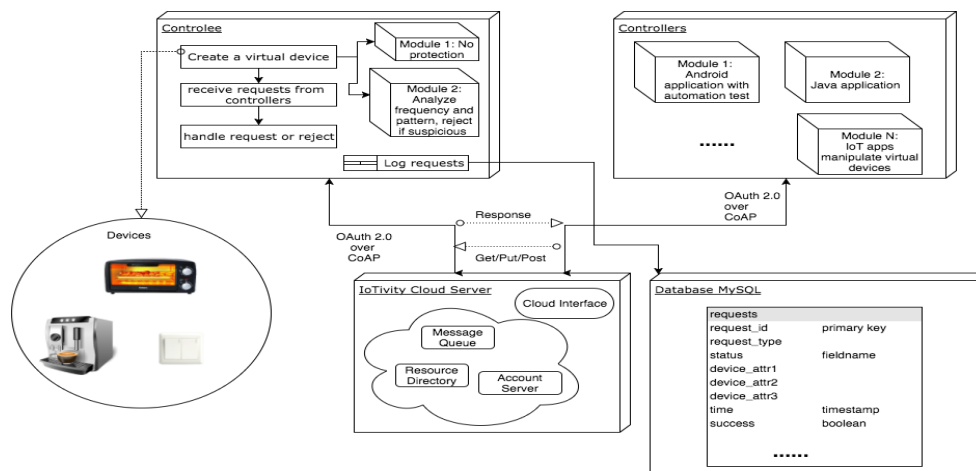
Approach

- Provide an application testing framework
- Provide a security layer to monitor application-level events

## Security Layer: Check Requests



## System Architecture



## Safety Enforcement

- Developed an application server (controlee) that enforces security policies
- Initial prototype implemented that detects attempts to cause device failures by sending requests at high rates
- Validated using virtual devices with and without protection

## Future Plan

- Create automated tests
- Extend the set of policies
- Provide as a library that can be integrated into apps on devices or deployed in the cloud or a hub
- Develop device-specific fuzzing techniques to test IoT application code on the devices
- Simulate attacks to test the robustness of the rejection policies