



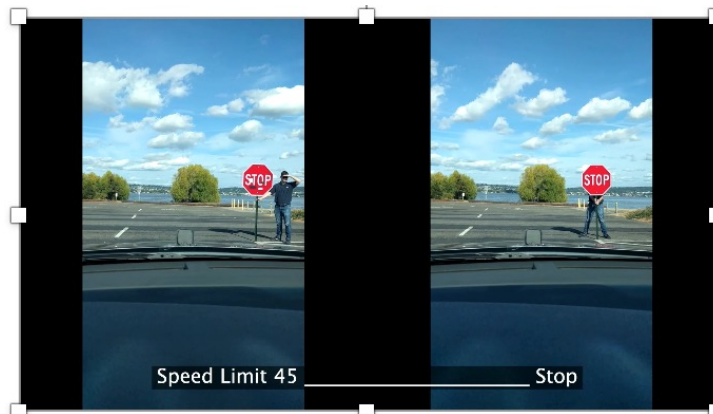
**CPS: Synergy: Collaborative Research: Support for Security and Safety of Programmable IoT Systems**  
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**Challenge:**

- How to test software in CPS systems and make them robust

**Solution:**

- Fast adversarial test generation and model analysis
- Fast model training to make them more robust
- Software analysis techniques



**Scientific Impact:**

- ATTA: Over 10x speedups in adversarial ML model training (CVPR 2020)
- Alloy model analysis (ISRE 2020)
- Runtime inspection and monitoring of software (ICST 2020)

**Broader Impact:**

- Open source software release
- Public engagement on AI and safety e.g., artifacts at London Science Museum
- Trained Ph.D. students who became faculty members

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