eSLIC: Enhanced Security Static Analysis of Configuration Scripts

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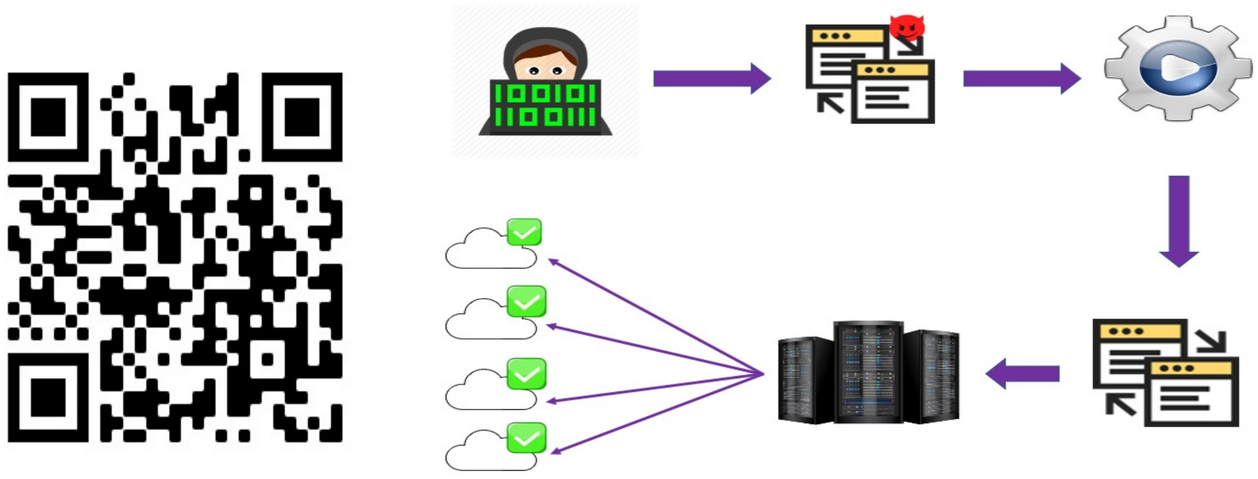
https://akondrahman.github.io/projects/



Secure development of configuration scripts enable secure provision of critical computing infrastructure

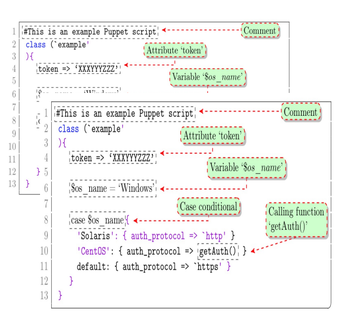
Key challenges:

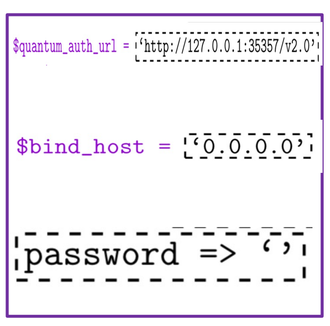
1. Variety of configuration script languages
2. Syntactical differences amongst languages
3. Information flow differences necessary for infrastructure management
4. Actionablity of security static analysis tools

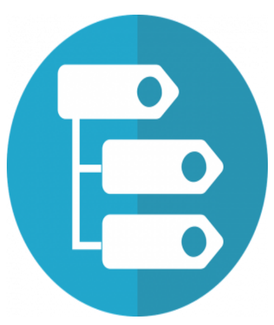
Scientific Impacts:

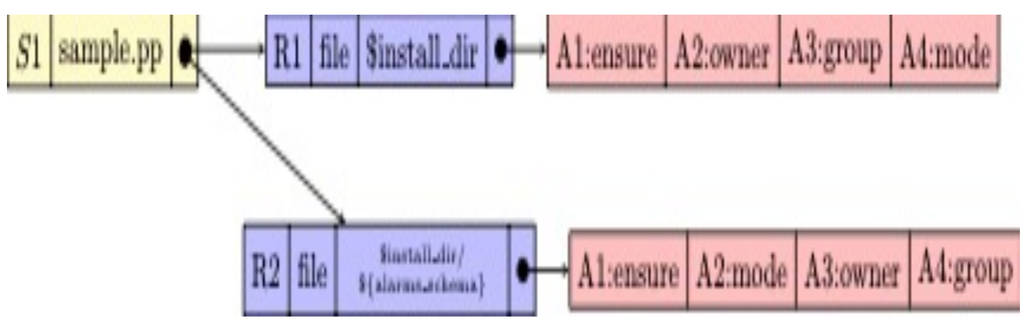
1. Advance state of the art of secure software development
2. Taxonomies of security weaknesses for configuration scripts
3. Detection of how security weaknesses propagate into critical computing infrastructure
4. Characterization of computing infrastructure affected by security weaknesses

Solution: mixed methods, robust parsing, information flow analysis









Broader Impact:

Secure the nation's cloud-based cyber infrastructure, an area highlighted in the 2021 White House Executive Order on improving the Nation's Cybersecurity.

Broader Impact:

Integration into courses related to software engineering, DevOps, and systems security taught at two institutions Tennessee Tech University and NC State University.

Broader Impact:

Promotes broadening participation in computing by funding two females PhD students.