



WILLIAM & MARY

CHARTERED 1693

CSCI 667: Concepts of Computer Security

Lecture 6

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Research Project Ideas

- *Novelty* : Is this new? Are we measuring/building/testing something nobody has before?
 - Security evaluation of smart home manager apps on the Android play store, using existing app analysis tools.
 - Building a firewall rule checker.
- *Feasibility* : Is this doable as a course project? Do we have the prerequisite skills? (e.g., the following is a good/bad idea if you already know/don't know NLP)
 - Automatically extract *security properties* from IoT device descriptions and perform a semi-automated ranking based on best practices.
- *Usefulness: Why* is this useful to know/have, for me and others?
 - *Automating your own security decisions*: I always uncheck “remember this computer” when using 2-factor auth on Google from *public computers*. Can I automate this? (e.g., write a plugin that replaces specific unsafe defaults with my safe defaults)

Research Project Ideas

- *Methodology*: How can we evaluate this proposal? May need one or more of the following:
 - Theoretical (i.e., proofs): Use process calculus to prove noninterference in an information flow control system (*only feasible if you have solid background*)
 - Experimental (e.g., data mining): Perform a systematic security analysis of XYZ category of Android apps. Download and test them with existing security tools (e.g., FlowDroid).
 - Empirical: Measure the potential impact of vulnerable IoT apps on devices (i.e., download apps, use NLP to get app → device dependencies, create a graph, and *analyze the graph* to find insights)

Project Proposal

- Due Date: **February 24th, 11:59PM**
- Submit a *LaTeX PDF document* that has
 - 1. Team members**
 - In case of >1 person in a team, *all members* must submit the proposal.
 - 2. Five *unique* project ideas**
 - Short descriptions (≤ 6 sentences)
 - Include the area, problem, motivation, solution, methodology (i.e., how will we show it works?).
 - Also, a sentence on why the problem/solution is important/novel and deserves attention.
 - 3. Potential Meeting Dates:** 3 30-45 minute slot next week.

Project Speed Dating