

Semester Thesis:

## Come again? Towards repeatable security experiments

Today's Laptops, Servers and mobile devices (smartphones, tablets, ...) are often used for sensitive applications (bank, health, ...) as well as non-sensitive applications (games) or are even shared among multiple users at the same time.

While various sandboxing and segregation techniques exist to ensure the security of sensitive application and information, the applications still share the system. The coexistence on the same system allows the leak information, for example through covert or side channels. In recent time, covert and side channels have been a very popular research topic, but the classification of their threat potential and a comparison of different covert channels are still very hard. In this thesis, we are experimental framework that allows researchers to setup experiments in a way which ensures repeatability. This will help to ensure comparability of existing and new covert and side channel analyses.

**Specify  
Experiment****Run  
Experiment****Analyse  
Data****Repeat**

### Tasks

The student will extend our work on the evaluation of covert and side channels. It mainly focuses on data leakage through physical characteristics of the CPU cores. The main tasks to complete the thesis will be:

- Get to know the existing measurement framework for known covert and side channels.
- Design a generic experiment flow (experiment specification to data analysis) which can be used for different experiment requirements.
- Implement and document the experiment flow.
- Show the functionality of the experiment flow by re-evaluating known covert and side channels.

### Requirements / Skills

- Knowledge in ...
  - UNIX Shell (Scripting)
  - Python
  - Basic knowledge in C/C++/Java
  - Software Development Paradigms and Versioning (GIT)
  - System Security
- Curiosity, ability to work independently and interest in security and in systems research

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