



Visualizing the Malicious Activity on Chemistry Lab Experiments

Hein Lab Setup



Robot Arm



Experiments

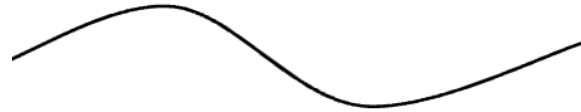
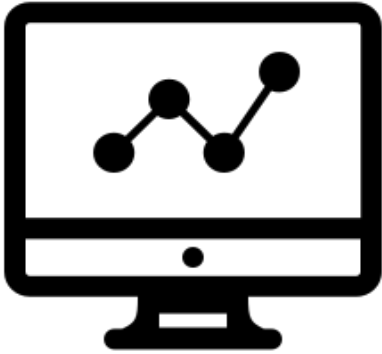


Lab Computer Running
Python Scripts



Hein Lab Setup

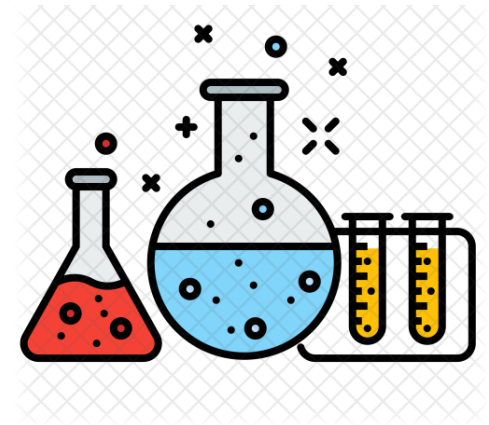
Lab Computer Running
Python Scripts



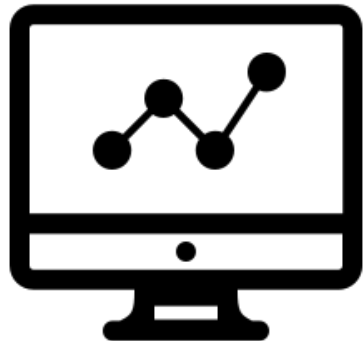
Robot Arm



Experiments



Middlebox Collecting
Traces



Data

Middlebox Collecting Traces

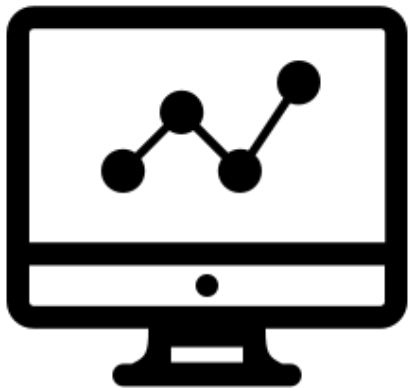


- Python scripts running chemical experiments
- Fetching the commands along with its arguments and exceptions

Goal

- Visualize the tracing data in order to detect between benign and malicious activity
- What useful information can we get out of visualizing these traces?

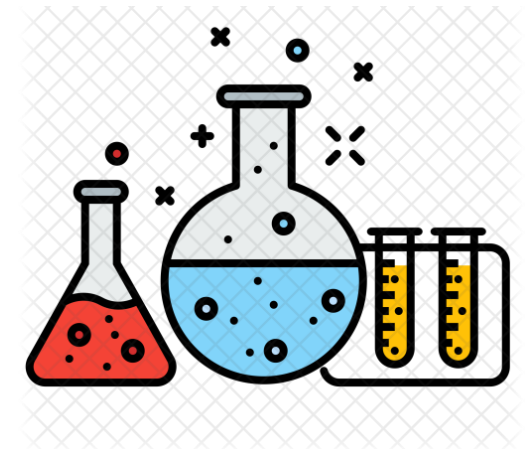
**Lab Computer Running
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Robot Arm



Experiments





Thank you!