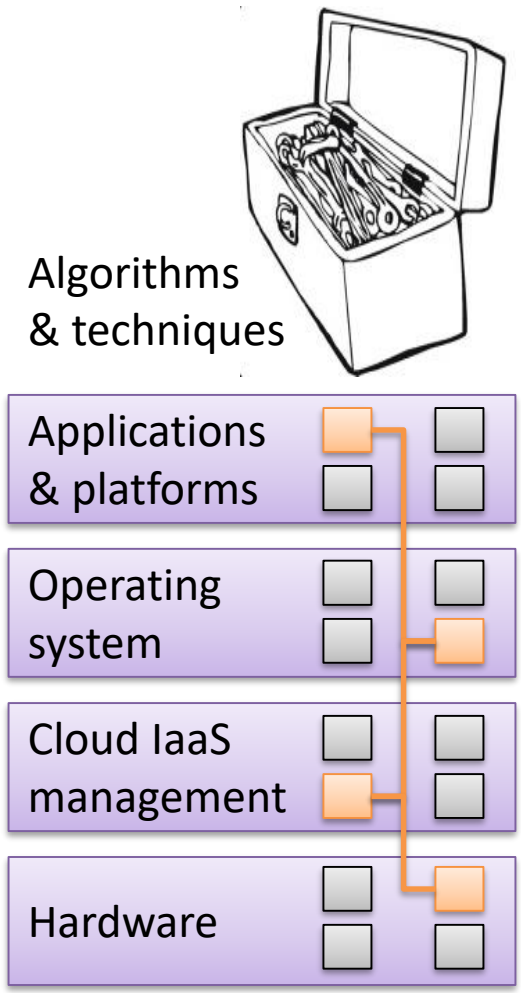
A Modular, User-Centric Security Analysis of OpenStack

Challenge:

- Cloud computing has a huge impact on society, but security concerns inhibit its uptake
- OpenStack is the prevalent open-source, non-proprietary package for managing cloud services and data centers
- Provide rigorous and holistic security analysis of OpenStack in the universally composable (UC) security framework

Solution:

- Analyze OpenStack's multiple inter-related components
- Assert the security of components individually
- Then compose to derive the overall system's security



Scientific Impact:

- *User-Centric*: Stresses the security guarantees given to users of the system
- *Modular*: Formulates security properties for individual components and deduces from these security properties of the overall service
- *Defense in Depth*: OpenStack can be improved, with minimal changes

Broader Impact:

- Showcase composable design and analysis as a viable basis for secure system design
- Impact upon the practice of cloud computing (collaboration Massachusetts Open Cloud)
- Several outreach programs to expose local-area middle and high school students and their teachers to cybersecurity

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