Komail Dharsee

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Objective

Modern security research often places hardware within the trusted computing base; however, the growing cost and complexity of fabrication infrastructure increases the difficulty of having trusted parties at all stages of manufacturing. The emerging resemblance of hardware design to software design bolsters my effort to mitigate vulnerabilities from hardware using software-oriented techniques.

Education

- **University of Rochester**
  PhD, Computer Science — *2016–Present*
- **Rutgers University**
  BS, Computer Science — *2010–2014*

Work Experience

- **University of Rochester**
  Research Assistant — *September 2016–Present*
  Applying formal methods and software-oriented approaches towards defenses against hardware vulnerabilities.
- **PNNL**
  Summer Intern — *March 2020–Present*
  Applying formal methods translate an ISA-based security policy to an equivalent policy described at the microarchitectural abstraction point
- **MIT Lincoln Laboratory**
  Summer Intern — *June 2018–August 2019*
  Analyzed hardware trojans detected by sophisticated hardware trojan detection mechanisms. Identified hardware trojan properties necessary to enable/evade detection. Designed trojans to enable/evade several trojan-detection mechanisms. Designed measures to evaluate detection mechanism reliability based off hardware properties.
- **Acquire Media**
  Software Engineer — *June 2015–August 2016*
  Back-end engineer working on the feed handler team. Designed and wrote feed handlers which collect and clean raw feed (commonly received in xml or json) fetched from various web scrapers, ftp sources, and other feed delivery tools. Reviewed colleagues' feed handler implementations prior to release.
- **Microsoft**
  Microsoft Student Partner — *September 2013–June 2014*
  Served as a Technical Evangelist for Microsoft at Rutgers University. Held App Development and Microsoft service training events. Lead and assisted students towards devloping and publishing apps for the Windows Store.
- **Rutgers University**
  Assistant Researcher — *September 2012–December 2013*
  Explored the construction of a novel file system that includes new content paradigms hooked to MongoDB. Built a prototype FUSE user-level file system to allow a dual (shell and MongoDB) file-system interface. Explored the applications of Hadoop cluster programming utilizing the Map/Reduce framework towards indexing file systems for search focused application.

Publications

- Dharsee, K., Johnson, E., and Criswell, J. (2017). A software solution for hardware vulnerabilities. In *2017 IEEE Cybersecurity Development (SecDev)*, pages 27–33
- Johnson, E., Dharsee, K., and Criswell, J. (2019). Secure Guest Virtual Machine Support in Apparition. In *Proceedings of the 15th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments*, VEE 2019, pages 17–30, New York, NY, USA. ACM