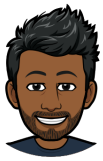

Akshith Gunasekaran

Publication

2021 **Fine-grained Analysis of Kernel Non-Determinism**.
- Clang pass that annotates non-deterministic code paths
- LLVM pass that creates a minimal kernel given an application workload.
- Effective attack surface reduction using a combination of static analysis and dynamic analysis methods.

2020 **Multi-K: A multiplexing framework for specialized kernels**.
- Kernel is specialized per application to reduce the attack surface.
- A kernel multiplexing framework with close to bare-metal context switching performance.

NDSS 2019 **Balancing Image Privacy and Usability with Thumbnail-Preserving Encryption**.
- An image encryption scheme that balances privacy and usability.
- Deployable with no changes to your cloud backend.
- Try it at photoencryption.org

Education

2017 - 2022 **PhD - Computer Science**, *Oregon State University*, Corvallis.
- Area of Focus: System Security, Applied Cryptography, AI
- Co-Advised by: Rakesh Bobba, Yeongjin Jang
- Coursework: CS Theory (algorithms, graph theory, distributed systems), Security (operating systems, cryptography), AI (machine learning, reinforcement learning)

2012 - 2016 **BTech in Computer Science**, *SRM University*, Chennai.
- Activities: ABU Asia-Pacific Robot Contest, Knowledge Based Search Engine
- Venture: Simpl, a fin-tech startup.

Work

Winter 2017 **Winter Intern - MIT Media Lab, Human Dynamics Group**.
- Mentored by: Dazza Greenwood
- Prototyped an authentication framework based on OAuth that directly translates permissions into enforceable contracts.
- Prototyped a decentralized autonomous organization to manage community loans.
- Tools: Node, Ethereum, web3.js, TravisCI

2014 - 2017 **Software Developer/Founding Team, Simpl**.
- A pay later service
- Built the MVP and on-boarded 10k users to raise the seed capital.
- Scaled the service using an event-based/pub-sub micro-service architecture. (1 of 4 devs)
- Built the data engineering pipeline, for Business Intelligence queries (1 of 2 devs)
- Tools: Golang, Ruby on Rails, Python, Redis, Kafka, RabbitMQ, Spark, Cassandra, Datadog.

Activities

Current **CTF Team**, *OSUSEC*.
- Skills: Pwn, Reverse Engineering, Program Analysis, Forensics

Summer 2019 **Instructor**, *Pacific North West Cyber Camp*.
- A week long hands-on educational camp for high school students.
- Topics include basic computer/network security hardening, cyber ethics
- Delivered the course material and instructed the lab sessions.

Summer 2018 **Volunteer**, *Pacific North West Cyber Camp*.

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2020 **Poster Jury**, *IEEE Security and Privacy*.

2020 **Shadow Program Committee**, *IEEE Security and Privacy*.

2019 **External Reviewer**, *ACM Conference on Computer and Communications Security*.

2019 **External Reviewer**, *IEEE Real-Time and Embedded Technology and Applications Symposium*.

2019 **External Reviewer**, *IEEE International Conference on Dependable Systems and Network*.

2018 **Teaching Assistant**, *CS290 Web Technologies and Web Security*.

Since 2017 **Research Mentor**, *Next Tech Lab*.

- A Multidisciplinary undergrad research lab.
- A Multidisciplinary undergrad research lab.
- International QS Award For Re-imagining Education
- I advise undergrads on Privacy and Security topics.