Gongqi Huang

Contact Information

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Research Interests

Operating Systems, Security, Programming Languages

Education

Princeton University, Princeton, NJ
- Ph.D. Candidate in Computer Science ..... Sep. 2022 - Present

Johns Hopkins University, Baltimore, MD
- M.S.E in Computer Science ..... May. 2022
- B.S. in Computer Science ..... May. 2021
  - Minor in Entrepreneurship and Management
  - Graduated with General Honors

Honors and Awards

Honorable Mentions in 2021 CRA Outstanding Ugrad Researcher Award ..... Dec. 2020

Research Experience

SNS Group at Princeton University
- Research Assistant ..... Sep. 2022 - Present
  - Hacking on a kernel in Rust and a hardware architecture in Scala to secure tiny devices from logical timing channels by construction (*under submission*).
  - Working on a μArch-leakage-aware program transformer (*in progress*).
  - Porting a high-level HDL into CIRCT (*in progress*).
  - Addressing inter-datacenter incast (*under submission*).
  - Worked on an automated debugging tool.
  - Developed a DIFC cloud system for user-centric security in Rust.

Order Lab at Johns Hopkins University
- Research Assistant ..... Dec. 2019 - Jun. 2022
  - Worked on the network stack of Linux kernel to achieve userspace-defined performance isolation and evaluated the prototype under real world cases.
  - Ported a revocable lock prototype from Solaris to Linux.
  - Developed a S^{2}E plugin in C to symbolically identify performance degradation in large software systems due to misconfiguration.

Work Experience

Google LLC
- Ph.D. Software Engineering Intern ..... May 2026 - Aug. 2026
  - Worked on fault-isolation for high-performance, offloaded storage I/O path of Google's Persistent Disk in C++.

Academic Work

Amelia Dobis, **Gongqi Huang**, and Mae Milano. Encoding Purely Functional Languages in an RTL-based Compiler. *Workshop on Languages, Tools, and Techniques for Accelerator Design (LATTE'26)*, March 2026.

Gongqi Huang, Jingyuan Chen, and Amit Levy. Incentivizing Side-Channel Freedom with Leakage-Aware Computation. In *Wild and Crazy Ideas Session at ASPLOS 2025* (WACI'25), April 2025.

Gongqi Huang, Leon Schuermann, and Amit Levy. Bridge: A Leak-Free Hardware-Software Architecture for Parallel Embedded Systems. *In Proceedings of the 2nd Workshop on Kernel Isolation, Safety and Verification (KISV'24)*, November 2024.

Yigong Hu, **Gongqi Huang**, and Peng Huang. Pushing Performance Isolation Boundaries into Application with pBox. *In Proceedings of the 29th Symposium on Operating Systems Principles (SOSP'23)*, October 2023.

Yigong Hu, **Gongqi Huang**, and Peng Huang. Automated Reasoning and Detection of Specious Configuration in Large Systems with Symbolic Execution. *14th USENIX Symposium on Operating Systems Design and Implementation (OSDI'20)*, November 2020.

Talks

- Tock Goes Multicore
  - TockWord8, Seattle, WA ..... Sep. 2026
- Incentivizing Side-Channel Freedom with Leakage-Aware Computation
  - WACI'25, Rotterdam, Netherlands ..... Apr. 2025
- A Leak-Free Hardware-Software Architecture for Parallel Embedded Systems
  - KISV'24, Austin, TX ..... Nov. 2024

Teaching Experience

- Intro to Programming Systems, Princeton, COS217 ..... Spring'24
- Intro to Programming Systems, Princeton, COS217 ..... Fall'23
- Principles of Operating Systems, JHU, CS3/4/618 ..... Fall'21
- Principles of Operating Systems, JHU, CS3/4/618 ..... Fall'20

Mentorship

- Aidan Ward (Princeton'26), Undergrad Thesis