JINGYUAN CHEN

leochanj105.github.io | leocjy@princeton.edu

EDUCATION

Princeton University   2022 - 2027 (expected)
Master & PhD in Computer Science   *Princeton, US*
· Advisor: Amit Levy
· Research Interest: Debugging, Program Analysis, Formal Methods

University of North Carolina at Chapel Hill   2018 - 2022
Bachelor of Science in Computer Science, Bachelor of Science in Mathematics   *Chapel Hill, US*
· Graduated with highest honor, GPA: 3.99/4.0

RESEARCH EXPERIENCE

Princeton University   Princeton, NJ
Research Assistant (advised by Amit Levy and Ravi Netravali)

Provenance-Guided Automatic Runtime Debugging   Sep 2022 - Present

Built a runtime debugger that automatically instruments tracepoints to record the data-flow provenances of cross-component bugs in distributed systems upon debugging queries. Developed static analysis and program slicing algorithms to prune the number of activated tracepoints according to information collected at the manifestation of bugs. Evaluated the tool against reported latent bugs in realistic distributed systems (TrainTicket and HDFS) and demonstrated its capability to reduce the burden of root-cause debugging with practical runtime overheads.

University of North Carolina at Chapel Hill   Chapel Hill, NC
Research Assistant (advised by James H. Anderson and F. Don Smith)

Making Powerful Enemies on NVIDIA GPUs   Aug 2021 - Aug 2022

Empirically evaluated the sensitivity of common GPU workloads to a wide range of interference channels in NVIDIA GPUs. Engineered "enemy" GPU kernels that maximize contention over hardware resources for approximating the worst-case execution times of real-time GPU kernels. Evaluated the enemies against real-world kernels and showed the effectiveness of the enemies in maximizing resource contention.

PUBLICATIONS

Provenance-Guided Automatic Runtime Debugging   In submission

Making Powerful Enemies on NVIDIA GPUs   IEEE RTSS'22
Tyler Yandrofski, **Jingyuan Chen**, Nathan Otterness, James H. Anderson and F. Donelson Smith

Minimizing DAG Utilization by Exploiting SMT   IEEE RTAS'22
Sims Hill Osborne, Joshua Bakita, **Jingyuan Chen**, Tyler Yandrofski, and James H. Anderson

Simultaneous Multithreading in Mixed-Criticality Real-Time Systems   IEEE RTAS'21
Joshua Bakita, Shareef Ahmed, Sims Hill Osborne, Stephen Tang, **Jingyuan Chen**, F. Donelson Smith, and James H. Anderson

TEACHING EXPERIENCES

Teaching Assistant, Princeton University   Aug 2023 - May 2024
· COS 316: Principles of Computer System Design (Fall 2023)
· COS 510: Programming Languages (Spring 2024)