JINGYUAN CHEN

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EDUCATION

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

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)