

Jason Zhijingcheng Yu

Visiting Researcher, Jane Street Capital

<https://corank.info/>

Research Interests

Computer architectures, capability-based security, programming languages

Awards

December 2025	NUS SoC Dean's Graduate Research Excellence Award
October 2023	NUS SoC Research Incentive Award
August 2015	Tsinghua University Freshman Scholarship
July 2014	CCF NOI 2014 Gold Medal Selected to join the Chinese National Training Camp for IOI 2015 (top 50 nation-wide)

Experience

Jun 2026 – present	Jane Street Capital Visiting Researcher
Nov 2019 – Jun 2026	KISP Lab, National University of Singapore Doctoral Researcher

Education

Aug 2019 – Jun 2026	National University of Singapore PhD in Computer Science Advisor: Prateek Saxena
Aug 2015 – Jul 2019	Tsinghua University BEng in Computer Science and Technology

Service

Conference PC member: AsiaCCS '26

Journal reviewer: ACM TACO (2025)

NUS CS Department Security Area Search Committee student member (2025)

Publications (* indicates equal contributions. Details on *Google Scholar* and *DBLP*)

- [1] Language-based Hardware Communication Safety and Liveness**
In *Workshop on Languages, Tools, and Techniques for Accelerator Design (LATTE) 2026*
Aditya Ranjan Jha*, Jason Zhijingcheng Yu*, Umang Mathur, Trevor E. Carlson, Prateek Saxena
- [2] Anvil: A General-Purpose Timing-Safe Hardware Description Language**
In proceedings of *ASPLOS 2026*
Jason Zhijingcheng Yu*, Aditya Ranjan Jha*, Umang Mathur, Trevor E. Carlson, Prateek Saxena
- [3] Securing Mixed Rust with Hardware Capabilities**
In proceedings of *ACM CCS 2025*
Jason Zhijingcheng Yu*, Fangqi Han*, Kaustab Choudhury, Trevor E. Carlson, Prateek Saxena
- [4] Caplification: Bridging Capability-Aware and Capability-Oblivious Software**
In proceedings of *ACM Symposium on Access Control Models and Technologies 2025*
Jason Zhijingcheng Yu, Mingkai Li, Trevor E. Carlson, Michael Swift, Prateek Saxena
- [5] CAPSTONE: A Capability-based Foundation for Trustless Secure Memory Access**
In proceedings of *USENIX Security Symposium 2023*
Jason Zhijingcheng Yu, Conrad Watt, Aditya Badole, Trevor E. Carlson, Prateek Saxena
- [6] ELASTICLAVE: An Efficient Memory Model for Enclaves**
In proceedings of *USENIX Security Symposium 2022*
Jason Zhijingcheng Yu, Shweta Shinde, Trevor E. Carlson, Prateek Saxena
- [7] SMASHEX: Smashing SGX Enclaves Using Exceptions**
In proceedings of *ACM CCS 2021*
Jinhua Cui*, Jason Zhijingcheng Yu*, Shweta Shinde, Prateek Saxena, Zhiping Cai

Posters

- May 2025 **An Architecture Design for Expressive Security**
At *RISC-V Summit Europe 2025* (Paris, France)
- November 2022 **SMASHEX: Smashing SGX Enclaves Using Exceptions**
At *ACM CCS 2022* (Los Angeles, USA)

Invited Talks

- November 2025 **Anvil: A General-Purpose Timing-Safe Hardware Description Language**
Singapore Programming Languages Summit
- September 2025 **Anvil: A General-Purpose Timing-Safe Hardware Description Language**
NUS PLSE Seminar
- August 2023 **CAPSTONE: A Capability-based Foundation for Trustless Secure Memory Access**
RISC-V Security HC Meeting
- August 2023 **CAPSTONE: A Capability-based Foundation for Trustless Secure Memory Access**
University of California, Riverside
- August 2023 **CAPSTONE: A Capability-based Foundation for Trustless Secure Memory Access**
University of California, Irvine
- January 2022 **ELASTICLAVE: An Efficient Memory Model for Enclaves**
Secure-IC (now part of Cadence)
- December 2021 **ELASTICLAVE: An Efficient Memory Model for Enclaves**
As part of tutorial *From EDA to TEEs, Security Tools for Understanding and Mitigating Side-Channel and Fault Injection Attacks*
Design Automation Conference 2021 (San Francisco, USA)

Technical Artefacts

Security disclosures: CVE-2021-33767, CVE-2021-0186

Technical specifications: Contributed to the RISC-V CHERI extension specification

Software releases: AnvilHDL (hardware description language), CapsLock (Rust FFI bug detection tool), Capstone (including RTL design, emulator, compiler, and software stack), Elasticlave (trusted execution environment)

Open-source contributions: Contributed bugfixes to gem5

Teaching

- Spring 2022 **Introduction to Computer Security (CS3235)**
National University of Singapore
- Spring 2021 **Introduction to Computer Security (CS3235)**
National University of Singapore
- Fall 2020 **Systems Security (CS5231)**
National University of Singapore
- Spring 2020 **Data Structures and Algorithms (CS2010)**
National University of Singapore
- Fall 2015 **Fundamentals of Programming (30240233)**
Tsinghua University

Project Mentorship

Undergraduates: Dao En Ding, Wern Lim

Interns: Kaustab Choudhury, Mingkai Li (now a PhD student at Columbia University), Atharv Singh Patlan (now a PhD student at Princeton University)

References

Prateek Saxena (PhD advisor)

Associate Professor, National University of Singapore, dcsprs@nus.edu.sg

Trevor E. Carlson (collaborator)

Associate Professor, National University of Singapore, tcarlson@comp.nus.edu.sg

Umang Mathur (collaborator)

Presidential Young Professor (Assistant Professor), National University of Singapore, umathur@nus.edu.sg

Michael Swift (collaborator)

Professor, University of Wisconsin, Madison, swift@cs.wisc.edu