Williams Zhang Cen

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Education

Binghamton University, State University of New York

PhD in Computer Science — Present
MS in Computer Science — Dec 2022
BS in Computer Science — May 2020

Broome Community College, State University of New York

AS in Computer Science — May 2018

Coursework: Algorithms, Architecture, Artificial Intelligence, Compiler Design, Computer Security, Database System, Hardware & Security Systems, Operating Systems, Programming Languages, Systems Programming

Research Interest

Compilers, Hardware Security, Program Augmentation, Program Verification, Side Channels

Publications

- K. Arıkan, H. Tang, **W. Zhang-Cen**, Y. D. Liu, N. Abu-Ghazaleh, D. Ponomarev. *"Secure Caches for Compartmentalized Software."* **USENIX Security 2025**.
- K. Arıkan, A. Farrell, **W. Zhang-Cen**, J. McMahon, B. Williams, Y. D. Liu, N. Abu-Ghazaleh, and D. Ponomarev. *"TEE-SHirT: Scalable Leakage-Free Cache Hierarchies for TEEs."* **NDSS Symposium 2024**.

Experience

Research Assistant | *Binghamton University* | Binghamton, NY — Jan 2022–Present
- Contributed to academic research on computer security and side-channel attacks.
- Assisted in providing benchmarks, running experiments, and analyzing results.

Teaching Assistant | *Binghamton University* | Binghamton, NY — Jan 2021–May 2023
- Lectured weekly lab sessions on computer architecture for 40 students.
- Provided teaching support by grading assignments and holding office hours.

Computer Science Tutor | *Broome Community College* | Binghamton, NY — Jan 2017–May 2018
- Proctored daily an open computer science lab of up to 30 students.
- Supported students in introductory-level computer science concepts.

Spanish Tutor | *Broome Community College* | Binghamton, NY — Jan 2017–May 2018
- Reinforced students' fluency in Spanish through individual meetings.
- Cultivated new vocabulary by emulating oral and written interactions.

Skills

C, C++, CUDA, LLVM, perf, Python

Additional: Arduino, C#, CSS, Git, Haskell, HTML, Java, JavaScript, Prolog, R, Raspberry Pi, Rust, SQL

Projects

Microelectronics Security Education — Present
- Introduced young students to microelectronics through hands-on projects.
- Created website and YouTube channel to guide students through easy-to-follow videos.

LLVM Transformation Passes on SPEC Benchmarks — 2024
- Automated IR generation and compilation of C/C++ based on SPEC benchmarks.
- Used LLVM to apply transformation passes to arbitrarily insert custom instructions into programs.

Olympic Rating System — 2022
- Developed a rating system to determine a winner for every Olympic event.
- Performance scores are calculated based on statistical analysis on NoSQL databases.