

# Williams Zhang Cen

 wzhangc1@binghamton.edu |  linkedin.com/in/wzhangc1 |  wzhangc1.github.io

## Education

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

## Research Interest

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**Compilers, Covert & Side Channels, Hardware Security, Program Augmentation, Program Verification**

## Publications

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### Peer-Reviewed

- K. Arikan, H. Tang, **W. Zhang-Cen**, Y. D. Liu, N. Abu-Ghazaleh, D. Ponomarev. “Secure Caches for Compartmentalized Software.” **USENIX Security 2025**.
- K. Arikan, 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**.

### Under Review

- Monitoring Isolated Programs Through Side Channels.
- Exploring New Covert and Side Channel in NVIDIA Tensor Cores.
- Program Verification on FPGAs Using Ring Oscillators.

## Experience

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### 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

- *OOP & Data Structures* and *Computer Architecture* - Led weekly lab sessions.
- 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

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

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

## Projects

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### Microelectronics Security Education | binghamton.edu/computer-science/research/secedu.html

2025–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.