Shixin Song

+1 734 546 8569 | shixins@umich.edu | zhizhuoxin.github.io

Research Interest

My research interest is in the intersection of computer architecture and software systems. I am specifically interested in building hardware-software co-design solutions that improve data center performance, energy, reliability, and security, to have significant real-world impact.

Education

University of Michigan — Ann Arbor, USA
Bachelor of Science in Computer Science — *2020 - 2022*

- **GPA: 4.00/4.00**

Shanghai Jiao Tong University — Shanghai, China
Bachelor of Science in Electrical and Computer Engineering — *2018 – 2020*

- **GPA: 3.89/4.00** (ranked 9th out of 248 students in the class)
- Ranked in the top 0.07% percentile in the National College Entrance Exam

Research Experience

Redesigning the Branch Target Buffer for Data Center Applications — 2021

Paper under submission: "Name omitted to maintain anonymity", **Shixin Song**, Tanvir Ahmed Khan, Sara Mahdizadeh Shahri, Akshitha Sriraman, Niranjan K Soundararajan, Sreenivas Subramoney, Daniel A. Jiménez, Heiner Litz, Baris Kasikci. *[International Symposium on Computer Architecture (ISCA) 2022]*

Presented a novel BTB replacement policy that achieves near-ideal front-end processor performance for data center applications

Won the first place award at MICRO'21 ACM Student Research Competition

Enabling early hardware development for futuristic data center applications — 2021

Characterized widely-used data center applications (e.g. MySQL, MongoDB, FFmpeg, Nginx) and predicted how these applications might evolve in the future to enable suitable hardware development early on

Peer-Reviewed Poster Publication

HWC: Profile-Guided Branch Target Buffer Replacement for Data Center Applications — 2021
Student Research Competition at International Symposium on Microarchitecture (MICRO) 2021
First place winner in the undergraduate category

Awards and Honors

CRA Outstanding Undergraduate Researcher Award Honorable Mention — 2022
Computing Research Association

ACM Student Research Competition First Place Winner — 2021
MICRO'21

Roger King Scholarship — 2021
University of Michigan — *Ann Arbor, USA*

Dean's List — 2020, 2021
University of Michigan — *Ann Arbor, USA*

SJTU Undergraduate Excellence Scholarship — 2019, 2020
Shanghai Jiao Tong University — *Shanghai, China*

Fuda Scholarship — 2019
Shanghai Jiao Tong University — *Shanghai, China*

Experience

Undergraduate Research Assistant 2021
University of Michigan *Ann Arbor, USA*
- **Advisor**: Prof. Baris Kasikci

Teaching Assistant 2019 – 2021
Shanghai Jiao Tong University *Shanghai, China*
- Introduction to Computers and Programming (VG 101)
- Introduction to Engineering (VG 100)
- Honors Mathematics II (VV 186)

Grader 2021
University of Michigan *Ann Arbor, USA*
- Introduction to Computer Organization (EECS 370)

Student Advisor 2019
Shanghai Jiao Tong University *Shanghai, China*

Volunteer Teaching 2018 – 2019
Sanhe Junior School *Yunnan, China*
- Math classes for grade 7 students

Technical Skills

Languages: C/C++, Python, Matlab, Mathematica, LaTeX, JavaScript
Software Tools: Linux Perf, Intel VTune, ChampSim, Git, Docker, CLion, PyCharm, IntelliJ, RoadRunner
Frameworks and Libraries: Pandas, NumPy, Matplotlib, React, Flask

Course Work

University of Michigan

∗ EECS 482: Introduction to Operating System, EECS 485: Web Systems, EECS 475: Introduction to Cryptography

Shanghai Jiao Tong University

∗ VE 280: Programming and Elementary Data Structures, VV 557: Methods of Applied Mathematics

References

Prof. Baris Kasikci
Assistant Professor
Electrical Engineering and Computer Science
University of Michigan
Email: barisk@umich.edu

Prof. Akshitha Sriraman
Assistant Professor
Electrical and Computer Engineering
Carnegie Mellon University
Email: akshitha@cmu.edu

Prof. Heiner Litz
Assistant Professor
Computer Science and Engineering
University of California, Santa Cruz
Email: hlitz@ucsc.edu