Mehrnoosh Raoufi

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Education

University of Pittsburgh — Pittsburgh, PA, US
Ph.D. in Computer Science, advised by Prof. Youtao Zhang — *Aug 2017 - Apr 2024*
M.Sc. in Computer Science — *Apr 2023*

University of Tehran — Tehran, Iran
B.Sc. in Computer Engineering — *Sep 2012 – Feb 2017*

Research

Computer Architecture • High-Performance Computing • Memory • Security

Experiences

Oracle America, Inc. *- Database and Systems Technologies*

Oracle Exadata Product — Exascale Infrastructure Development Team

Senior Member of Technichal Staff — *May 2024 - present*

Distributed storage service development.

Software Engineer Intern — *Jun 2023 - Aug 2023*

Automatic rescue of corrupted Raft logs in distributed systems.

University of Pittsburgh — *Aug 2017 - Apr 2024*

Graduate Student Researcher

Architectural support for performance, space, and bandwidth improvement in modern computing;

Secure Memory with ORAM

Improving the efficiency of memory access pattern obfuscation to enhance user privacy deployment.

Processing-in-Memory Accelerator

Reducing bandwidth overhead of page deduplication of kernel KSM service in Linux KVM.

Teaching Assistant

Computer Architecture, Computer Organization and Assembly Language

Publications

[DAC'23] M. Raoufi, J. Yang, X. Tang, Y. Zhang, "EP-ORAM: Efficient NVM-Friendly Path Eviction for Ring ORAM in Hybrid Memory," Design Automation Conference, San Francisco, USA, July 2023.

[HPCA'23] M. Raoufi, J. Yang, X. Tang, Y. Zhang, "AB-ORAM: Constructing Adjustable Buckets for Space Reduction in Ring ORAM," IEEE International Symposium on High-Performance Computer Architecture, Montreal, Canada, Feb 2023.

[HPCA'22] M. Raoufi, Y. Zhang, and J. Yang, "IR-ORAM: Path Access Type based Memory Intensity Reduction for Path-ORAM," IEEE International Symposium on High-Performance Computer Architecture, Seoul, SK, April 2022.

[ISVLSI'19] M. Raoufi, Q. Deng, Y. Zhang, and J. Yang, "PageCmp: Bandwidth Efficient Page Deduplication through In-memory Page Comparison," IEEE Computer Society Annual Symposium on VLSI, Miami, FL, USA, July 2019.

Skills

Programming Languages C/C++ | Java | Python

Web Development HTML | CSS | Bootstrap | JS

HDLs/CAD Tools Verilog | VHDL | ModelSim | Quartus | CodeVision | Altium | Hspice

Tools VS Code | IntelliJ | Git | VIM | Bash Script | MATLAB | LaTeX | Pin Tool | SLURM

Projects

Object Detector Faster RCNN training and evaluation in *PyTorch*. (Computer Vision) *2021*

Deep Neural Network LeNet-5 from scratch in *PyTorch*. (HW Architecture for Machine Learning) *2019*

Mini Google Distributed indexer and search engine in *Java*. (Operating System) *2018*

Distributed Mutual Exclusion File update lock management using Lamport's. (Operating System) *2018*

Frogger Game Solver AI solver agent using *Q-learning* in *Python*. (Artificial intelligence) *2018*

Tomasulo Processor OoO processor using *C* in *SST* simulator. (Computer Architecture) *2017*

MAC Simulation Implemented using Network Simulator with *UDP* protocol. (Network Systems) *2015*

Firewall Simulator Servicing client processes based on their permissions in *C++*. (Network Systems) *2015*

Stock Market Web-based application using *Tomcat* and *AngularJS*. (Internet Engineering) *2016*

Motion Detector Speedup image processing using *Intel SIMD* instructions. (Parallel Processing) *2015*

SLAM Problem Robot programming with ultrasonic sensors and *Arduino*. (Rapid Prototyping) *2015*

MIPS Processor Synthesized in *Verilog* on Altera DE0 Board. (Computer Architecture Lab) *2015*

Step Counter Created *PCB* that interacts with Windows app via *USB*. (Interface Circuits) *2015*

Simple Router Implemented in *VHDL* simulated in *ModelSim*. (Computer Aided Design) *2014*

Digital Piano Created *PCB* using *AVR* and SD card to play & record melodies. (Microprocessor) *2014*

Social Network *B+ tree*, graph partitioning and influence detector in *Java*. (Data Structure) *2013*

Honors & Awards

Student Travel Grant, International Symposium on Computer Architecture *Jun 2022*

Best Poster Award for Course Project, Carnegie Melon University *May 2019*

Richard Newton Young Student Fellowship, Design Automation Conference *Jun 2018*

Graduate Fellowship, University of Pittsburgh *Sep 2017*

Ranked 3^{rd} in Overall GPA, University of Tehran *Feb 2017*

Top 1% in National University Entrance Exam , Iran *Aug 2012*

Services

AS Faculty Search Committee, University of Pittsburgh *Jan 2023 - May 2023*

Collaborated with a team of six faculty members on a faculty search committee.

Conference Review Assistant *Jun 2022*

IEEE/ACM International Symposium on Microarchitecture (MICRO)

Journal Reviewer *Dec 2019*

ACM Transactions on Embedded Computing Systems (TECS)