# SARA MAHDIZADEH SHAHRI

smahdiz@umich.edu ◇ Website ◇ LinkedIn ◇ Google Scholar ◇ Github

## EDUCATION

**PhD, Computer Science and Engineering** — *University of Michigan*
Advisor: Prof. Baris Kasikci — *Aug 2021 - Present*

**PhD, Computer Science and Engineering** — *Pennsylvania State University*
Advisor: Dr. Aasheesh Kolli — *Aug 2018 - Aug 2021*
Transferred to University of Michigan

**M.Sc., Computer Science and Engineering** — *Pennsylvania State University*
Advisor: Dr. Aasheesh Kolli — *Aug 2018 - Dec 2020*
GPA: 4 out of 4

**B.Sc. Computer Engineering** — *Sharif University of Technology*
Advisor: Prof. Hamid Sarbazi-Azad — *Sep 2013 - Feb 2018*
GPA: 18.51 out of 20

## RESEARCH INTERESTS

My research interests broadly explore the intersection of compiler, operating systems, and computer architecture. I specifically look into modern data center applications and their characteristics using variety of profiling tools to help improve their performance.

Prior to this, I focused on the emerging non-volatile memory technologies. In my work, I try to address the trade-off between programmability and performance of these memories through software/hardware co-design solutions.

## PUBLICATIONS

- **Sara Mahdizadeh Shahri**, Seyed Armin Vakil Ghahani, Aasheesh Kolli, (Almost) Fence-less Persist Ordering, International Symposium on Microarchitecture (MICRO), 2020.
- Seyed Armin Vakil Ghahani, **Sara Mahdizadeh Shahri**, Mohammad Bakhshalipour, Pejman Lotfi-Kamran, and Hamid Sarbazi-Azad, Making Belady-Inspired Replacement Policies More Effective Using Expected Hit Count, in arXiv preprint arXiv, 2018.
- Seyed Armin Vakil Ghahani, **Sara Mahdizadeh Shahri**, Mohammad-Reza Lotfi-Namin, Mohammad Bakhshalipour, Pejman Lotfi-Kamran, and Hamid Sarbazi-Azad, Cache Replacement Policy Based on Expected Hit Count, in IEEE Computer Architecture Letters(CAL), 2017.

## POSTER

- **Sara Mahdizadeh Shahri**, Aasheesh Kolli, Delivering Correct and Fast Persistency Guarantees, The First Young Architect Workshop (YArch) co-located with HPCA, 2019.

## WORK AND RESEARCH EXPERIENCE

**Graduate Research Assistant**, University of Michigan — *Aug 2021 - Present*
Advisor: Prof. Baris Kasikci

Exploring and developing a proxy benchmark suite that exhibit the challenges and static/dynamic characteristics of modern Web applications using compiler solutions.

**Software Intern**, Google *May 2021-Aug 2021*
Team: Cloud Dataflow
Supervisor: Aaron Li

Working on improving the container startup latency for workers in Dataflow Service. Specifically, integrating an internal Google technology with Dataflow to enable initiating startup of containers right away without the need for entire container images to be pulled locally.

**Graduate Research Assistant**, Pennsylvania State University *Aug 2018 - Present*
Advisor: Dr. Aasheesh Kolli

Designing persistency models for non-volatile caches and exploring persistent memory programming models' challenges and opportunities using compiler and hardware solutions.

**Undergraduate Research Assistant**, Sharif University of Technology *Sep 2016 - Feb 2018*
Advisor: Prof. Pejman Lotfi-Kamran, Prof. Hamid Sarbazi-Azad

Exploring different cache replacement policies in the last level cache with ChampSim simulator.

## PRESENTATION

**(Almost) Fence-less Persist Ordering**

– International Symposium on Microarchitecture (MICRO) *Oct 2020*

**Delivering Correct and Fast Persistency Guarantees**

– The First Young Architect Workshop (YArch) co-located with HPCA *Feb 2019*

## TEACHING EXPERIENCE

**Graduate Teaching Assistant**, Pennsylvania State University

– Graduate Computer Architecture, Dr. Aasheesh Kolli *Fall 2019*

**Undergraduate Teaching Assistant**, Sharif University of Technology

– Digital Systems Design, Prof. Alireza Ejlali *Fall 2017*

– Computer Structure and Language, Dr. Hossein Asadi *Fall 2017*

– Computer Architecture, Prof. Hossein Asadi *Spring 2016*

– Logic Design, Prof. Alireza Ejlali *Spring 2016*

– Advanced Logic Design, Prof. Alireza Ejlali *Fall 2016*

## HONORS AND AWARDS

– Among 7 top-selected replacement policies participated in The Second Cache Replacement Championship, Co-located with ISCA, 2017.

– Ranked 2nd in Computer Hardware Eng. among students graduated 2018, Sharif University of Technology B.Sc program at Computer Engineering Department

– Awarded certificate for top 25 percent of the contestants in FPGA national contest, Shahid Beheshti University, 2016.

– Ranked 201st in national university entrance exam among over 300,000 participants, 2013.

## PROJECTS

– Using Paxos To Build A Linearizable KV-Storage *Dec 2020*

- Key-Value store based on linearizable and causal consistency *Nov 2020*
- Parallel distributed file system *Dec 2019*
- In-order/ OoO Architectural Simulator *Dec 2019*
- Dynamic binary instrumentation for persistency guarantees *May 2019*
- Reducing Power Consumption according to Real-Time Constraints *Jan 2018*
- Trax Game & NoC Simulator(MemoCode 2011), Verilog *Apr 2016*
- Great Little War Game *Jan 2015*
- Billiard *Jan 2014*

## TECHNICAL SKILLS

| | |
|---|---|
| **Programming Languages** | C/ C++, Python, Shell, Go, Verilog, Assembly |
| **System Skills** | Low-level Systems Programming, Kubernetes, Performance Characterization, Scripting |
| **Hardware Simulators** | Gem5, DRAMsim2, CACTI, ChampSim |
| **Tools and Frameworks** | LLVM, DynamoRIO, Pin, Linux perf, Intel PMU tools, Intel PT, gRPC, Google Protobuf |

## REFERENCES

1. Prof. Baris Kasikci (barisk@umich.edu)
   Assistant Professor of CSE, University of Michigan
2. Dr. Aasheesh Kolli (aasheesh@google.com)
   Google
3. Aaron Li (aaronleeiv@google.com)
   Google
4. Yuta Labur (ylabur@google.com)
   Google