

Armin Vakil

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EDUCATION

Pennsylvania State University, University Park, PA

Aug 2018 – Now

- Ph.D. Student in Computer Science & Engineering Department
 - Advisor: Prof. Mahmut Taylan Kandemir
 - GPA: 4/4 (up to now)
 - **Relevant Graduate Courses:** Computer Architecture, Data Structures & Algorithms, Binary-level Analysis, Language-based Security, Operating Systems, Emerging Technologies

Sharif University Of Technology, Tehran, Iran

Sep 2013 – Jul 2018

- Bachelor of Science (B.S.) in Computer Engineering - Hardware
 - Thesis: Cache Replacement Policy Based on Expected Hit Count
 - Advisor: Prof. Hamid Sarbazi-Azad

RESEARCH INTERESTS

- Computer Architecture
- Memory Systems
- Persistent Memory
- In-memory computation
- Distributed storage

PUBLICATIONS

- **Armin Vakil**, Mahmut Taylan Kandemir, Jagadish Kotra “DSM: A Case for Hardware-Assisted Merging of DRAM Rows with Same Content”, *In Proceedings of the ACM on Measurement and Analysis of Computing Systems*, (**SIGMETRICS 2020**)
- Mohammad Bakhshalipour, Aydin Faraji, **Armin Vakil**, Farid Samandi, Pejman Lotfi-Kamran, Hamid Sarbazi-Azad “Reducing Writebacks Through In-Cache Displacement”, *ACM Transactions on Design Automation of Electronic Systems*, (**TODAES 2019**)
- **Armin Vakil**, Sara Mahdizadeh Shahri, Mohammad Bakhshalipour, Pejman Lotfi-Kamran, Hamid Sarbazi-Azad “Making Belady-Inspired Replacement Policies More Effective Using Expected Hit Count.” *arXiv preprint*, (**arXiv 2018**)
- **Armin Vakil**, Sara Mahdizadeh Shahri, Mohammad-Reza Lotfi-Namin, Mohammad Bakhshalipour, Pejman Lotfi-Kamran, Hamid Sarbazi-Azad, “Cache Replacement Policy Based on Expected Hit Count”, *IEEE Computer Architecture Letters*, (**CAL 2017**)

WORK EXPERIENCE

- Software Developer, **I-Cliqq** Jan 2018 – Aug 2018
 - Designing Embroidery Software
- Software Developer, **Viratech Sharif**, Tehran, Iran Sep 2015 – Sep 2016
 - Traffic Simulator (C++) - Network Simulator
 - Add tunneling protocol between link, internet, and transport layer

RESEARCH EXPERIENCE

- **Pennsylvania State University**
 - ◇ **Memory Refreshes** - DRAM memories need refresh operations because they lost their content over time. The overhead of these refreshes increases with larger DRAM memories. My research focus is to reduce memory refreshes with the help from operating system.
 - ◇ **Persistent Memory** - Exploring persistent memory programming challenges and opportunities.

SKILLS

- Computer Architecture Simulators: gem5, DRAMsim2, Ramulator, SimpleSSD, ChampSim
- Programming Languages: C/C++, Verilog, Python, R, Shell, MIPS
- Tools & Frameworks: Qemu, Pin, DynamoRIO, LLVM, Google Protobuf, gRPC, Qt
- Operating Systems: Ubuntu(Native), Windows
- Type Setting: L^AT_EX, Microsoft Office

TEACHING EXPERIENCE	<ul style="list-style-type: none"> ▪ Teaching Assistant at Pennsylvania State University <ul style="list-style-type: none"> • Introduction to Computer Architecture (CMPEN 431) Spring 2020 • Computer Organization and Design (CMPEN 331) Fall 2018, 2019, Spring 2019 ▪ Teaching Assistant at Sharif University of Technology <ul style="list-style-type: none"> • Computer Architecture Fall 2016, 2017 • Digital System Design Spring & Fall 2017 • Digital Design Spring 2017 • Advanced Logic Design Fall 2016 • Discrete Structures Spring 2016 • Advanced Programming Fall 2014, 2015 • Fundamental Of Programming Spring & Fall 2014 ▪ Teaching Combinatorics, Graph Theory, Algorithm, and Programming Sep 2013 – Mar 2018 <ul style="list-style-type: none"> • National Organization for Development of Exceptional Talents high schools in different cities such as Tehran, Khoramabad, Zahedan, Semnan, and Shahrud • Salam YusefAbad, Salam Dibaji, and Mofid high schools
HONORS AND AWARDS	<ul style="list-style-type: none"> ▪ Qualified for 2nd Cache Replacement Championship (CRC-2) Jun 2017 <ul style="list-style-type: none"> • Cache Replacement Policy Based on Expected Hit Count ▪ Silver Medal in 22nd Iran National Olympiad in Informatics(INOI) Sep 2012 ▪ Ranked 10th in 1st Round of 22nd Iran National Olympiad in Informatics Mar 2012 among 10,000 participants
EXTRA- CURRICULAR ACTIVITY	<ul style="list-style-type: none"> ▪ Sharif AI Challenge (Contest Organizer) Jan 2015 – Jan 2017 <ul style="list-style-type: none"> • Student Programming Contest • C++ Client ▪ 1st Gateuino Contest (Contest Organizer) May 2016 <ul style="list-style-type: none"> • L1D-Prefetching Contest ▪ Trax Game Apr 2016 <ul style="list-style-type: none"> • Two player game based on Verilog ▪ Judge Mar 2015 <ul style="list-style-type: none"> • Designing and implementing a judge system for evaluating codes ▪ Sudoku Jan 2013 <ul style="list-style-type: none"> • Graphical Sudoku game based on GTK
COURSE PROJECTS	<ul style="list-style-type: none"> ▪ Parallel Distributed File System Dec 2019 <ul style="list-style-type: none"> • Based on gRPC and Google Protobuf ▪ NoC Jan 2016 <ul style="list-style-type: none"> • 3D Mesh Network on Chip based on Verilog ▪ Plants vs Zombies Jul 2014 <ul style="list-style-type: none"> • Based on Qt Creator ▪ Billiard Jan 2014 <ul style="list-style-type: none"> • Graphical Billiard game based on GTK
LANGUAGES	<ul style="list-style-type: none"> ▪ Persian: Native ▪ English: Fluent