Mohammad Bakhshalipour

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Research Interests

◇ **Computer Architecture**; with an emphasis on *Memory Systems*

Education

◇ **M.Sc. in Computer Architecture** 2015 – Present
Department of Computer Engineering
Sharif University of Technology, Tehran, Iran
Advisor: Prof. Hamid Sarbazi-Azad
GPA: 20/20

◇ **B.Sc. in Computer Engineering** 2011 – 2015
Department of Computer Engineering
Sharif University of Technology, Tehran, Iran
Thesis: Performance and Power Implications of Memory Divergence in GPGPU Workloads
Advisor: Prof. Hamid Sarbazi-Azad
GPA: 18.20/20 (Last Two Years: 19.27/20)

◇ **High School Diploma in Mathematics and Physics** 2006 – 2010
Allameh-Helli High School, Khoy, Iran
Affiliation: National Organization for the Development of Exceptional Talents (NODET)
GPA: 19.87/20

Honors and Awards

◇ Ranked 1^{st} in terms of cumulative GPA among Computer Architecture students, Sharif University of Technology (2017).

◇ Ranked 2^{nd} in terms of cumulative GPA among Computer Hardware Engineering students, Sharif University of Technology (2015).

◇ Ranked 2^{nd} in national entrance exam for M.Sc. studies in Computer Architecture among more than 30,000 participants (2015).

◇ Admitted to the M.Sc. program at Sharif University of Technology as an Exceptional Talented Student (2015).

◇ Ranked among top 0.1% in the nationwide entrance exam of Iranian Universities among more than $400,000$ participants (2010).

◇ Ranked 1^{st} in terms of cumulative GPA among Physics and Mathematics students, Allameh-Helli High School (2010).

Publications

◇ **M. Bakhshalipour**, P. Lotfi-Kamran, and H. Sarbazi-Azad, "An Efficient Temporal Data Prefetcher for L1 Caches," accepted for publication in *IEEE Computer Architecture Letter (CAL),* 2017.

Research Experience

◇ **Sharif University of Technology** and **Institute for Research in Fundamental Sciences**, Tehran, Iran (2015 – Present).
Research Assistant - Advisors: Dr. Hamid Sarbazi-Azad and Dr. Pejman Lotfi-Kamran

· *Efficient Temporal Data Prefetching*

While it has been shown that simple prefetching techniques such as stride prefetching are ineffective for server workloads, more advanced data prefetchers can eliminate or reduce the effect of cache misses in server workloads. One of the promising prefetching techniques is temporal prefetching. While existing temporal prefetching techniques are effective at reducing cache

misses, we observe that there is a significant gap between what they offer and the opportunity for temporal prefetching. This work aims at bridging the gap between what a temporal prefetching technique offers and the opportunity.

◇ **High Performance Computer Architectures & Networks Laboratory (HPCAN)**
Sharif University of Technology, Tehran, Iran (2014 – 2015).
Research Assistant - Advisor: Prof. Hamid Sarbazi-Azad

· *Performance and Power Implications of Memory Divergence in GPGPU Workloads*

In this work, which was done as part of my B.Sc. thesis, I evaluated GPGPU workloads and identified how much their performance and power have been affected by memory divergence. I used performance counters of a modern GPGPU to characterize GPGPU workloads. I designed and implemented a framework that takes a GPGPU workload as an input, and identifies sources of memory divergence that can affect performance and power consumption as the output. The framework also estimates the maximum potential penalty of the divergence for a given workload.

CourseWork

◇ **M.Sc., Sharif University of Technology**:
Advanced Computer Architecture (20/20), Advanced Microprocessor (20/20), Advanced Storage Systems (20/20), System-on-Chip Design (20/20), Low Power Design (20/20), Advanced VLSI Desing (20/20), Testability (20/20).

◇ **B.Sc., Sharif University of Technology**:
Computer Architecture (19.3/20), Microprocessor (20/20), VLSI Design (20/20), Digital Electronics (20/20), Embedded Systems Design (Graduate Course, 20/20), Computer Networks (20/20), Compiler Design (20/20), Data Structure and Design of Algorithms (20/20), B.Sc. Thesis (20/20).

Teaching Experience

◇ **Teaching Assistant**
Sharif University of Technology

· Advanced Storage Systems (Graduate Course)	Fall 2016
· Advanced Computer Architecture (Graduate Course)	Fall 2016
· Computer Architecture Lab	Summer 2016, Fall 2016
· Embedded Systems Design (Graduate Course)	Spring 2016
· Computer Architecture	Fall 2015, Spring 2014
· Computer Networks	Fall 2015
· Computer Organization	Spring 2015, Fall 2014
· Electrical Circuits	Spring 2015, Spring 2014, Fall 2013
· Digital Systems Design	Fall 2014, Spring 2014
· Advanced Logic Design	Spring 2015
· Signals and Systems	Spring 2014
· Numerical Computations	Spring 2015, Spring 2014, Spring 2013
· Engineering Probability and Stochastic	Fall 2013

Professional Activities

◇ **Reviewer**
Journal of Circuits, Systems, and Computers (JCSC) 2016

Skills

◇ **Programming Languages**: Expert at C/C++, C#, Verilog; Good at Bash.

◇ **Operating Systems**: Native Linux User (Debian & RedHat), Microsoft Windows.

◇ **Typesetting**: LaTeX, Vim.

◇ **Statistical**: MATLAB, Octave.

◇ **Simulators**: Flexus, GPGPU-Sim Modelsim.

◇ **Design and Synthesis Tools**: Design Compiler, Power Compiler, DFT Compiler, SoC Encounter, HSpice, Quartus, Altium Designer.