

Moein Khazraee

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Education	PhD in Computer Engineering, UC San Diego	2013 - 2020
	Dissertation: Reducing the development cost of customized hardware acceleration for cloud infrastructure Adviser: Aaron Schulman Specialization: Computer Systems and Networking	
	Technology Management and Entrepreneurism Certificate Program Institute for the Global Entrepreneur, UC San Diego	2017-2018
	Masters in Computer Science, UC San Diego Adviser: Michael Taylor Specialization: Computer Architecture	2013 - 2016
	B.S. in Electrical Engineering, Sharif University of Technology Specialization: Digital Systems	2008-2013

Publications

- [M. Khazraee](#), Y. Guddeti, S. Crow, A. Snoeren, K. Levchenko, D. Bharadia, A. Schulman, “SparSDR: Sparsity-proportional Wideband SDRs”, *Mobisys*, 2019.
- Y. Guddeti, R. Subbaraman, [M. Khazraee](#), A. Schulman, D. Bharadia, “SweepSense: Sensing 5 GHz in 5 Milliseconds with Low-cost SDRs”, *NSDI*, 2019.
- S. Xie, S. Davidson, I. Magaki, [M. Khazraee](#), L. Vega, L. Zhang, M. B. Taylor, “Extreme Datacenter Specialization for Planet-Scale Computing: ASIC Clouds”, *ACM SIGOPS Operating Systems Review, Special Topics*, 2018.
- [M. Khazraee](#), L. V Gutierrez, I. Magaki, M. B. Taylor, “Specializing a planet’s computation: ASIC Clouds”, *IEEE Micro top picks*, 2017.
- [M. Khazraee](#), L. Zhang, L. V Gutierrez, M. B. Taylor, “Moonwalk: NRE optimization in ASIC Clouds, or, accelerators will use old silicon”, *ASPLOS*, 2017.
- I. Magaki, [M. Khazraee](#), L. V Gutierrez, M. B. Taylor, “ASIC clouds: specializing the datacenter”, *ISCA*, 2016.
- [M. Khazraee](#), “Promises and Perils in 3D Architecture”, *UCSD*, 2016.
- [M. Khazraee](#), A. R. Zamani, M. Hallajian, S. P. Ehsani, H. A. Moghaddam, A. Parsafar, M. Shabany. “A novel hardware implementation for joint heart rate, respiration rate, and gait analysis applied to Body Area Network.”, *ISCAS, IEEE*, 2013.
- M. R. Homaeinezhad, M. Khazraee, [M. Khazraee](#). “An Open-Source High Speed C++/MEX Framework for the Detection and Delineation of Long Duration Ambulatory Holter ECG Events: HSEDF.”, *International Journal of Information Engineering*, 2.1 (2012): 12-30.

Research	Software-defined FPGA SmartNICs	Jul. 2017 - Present
	<ul style="list-style-type: none">• Developing a framework for FPGA SmartNICs to reduce development time and cost. We achieve this by improving flexibility, modularity and debuggability for networked applications.	
	More efficient spectrum reading using commodity SDRs	Jul. 2018 - Present
	<ul style="list-style-type: none">• Developing low-cost and low-latency SDR systems with backhaul bandwidth requirement of proportional to actual transmitted data.• Using commodity low-end SDR systems to sweep the full 5GHz while detecting communication type.	

- Developed a prototypical ASIC Cloud architecture, which are data-centers full of ASICs, emerging in near future.
- Developed an infrastructure to design the TCO-optimal data-center for these clouds.
- Showed that technology node selection is a major tool for managing ASIC Cloud NRE, which is the main challenge for ASIC Clouds. This allows the designer to trade off an accelerators excess energy efficiency and cost performance for lower total cost.

Undergraduate Research**Bioengineering systems**

2011 - 2013

- Biomedical signal processing and digital circuit implementation for wireless medical care system based on Body Area Networks (BAN). Specifically establishing sensor networks through Bluetooth, utilizing MEMS and pressure sensors for gait detection, and ECG and body posture analysis.
- ECG signal processing for the detection of long duration ambulatory holter ECG events, using C++ (MEX in MATLAB) for high speed

Work Experience**Research Assistant UC San Diego**

Sep. 2013 - Present

- Evaluating performance and power trade-offs for different architectures such as ASICs, FPGAs, DSPs, ASIPs, and server Processors.

Software Engineer Intern Google

Apr. 2017 - Jul. 2017

Collaborated with a team of engineers to develop a methodology for TCO analysis for a part of Google's infrastructure (confidential):

- Learned about how TCO is evaluated in large scale datacenters
- Used different profiling tools such as perf, valgrind to improve a C++ program performance.

Academic Experience**Teaching Assistant UC San Diego**

Fall 2014

- Teaching Assistant for Principals of Computer Architecture graduate course

Teaching Assistant Sharif University of Technology

2011 - 2013

- Instructor for "Verilog" part of "Logic Circuits and Digital Systems" course (three semesters), recreated a new syllabus
- Member of design group for "Embedded Systems' Laboratory"
- Revised experiments and instructions for "Structure of Computer and Microprocessors Lab"

Teacher Allame Helli 5 (NODET) Junior High School

2012-2013

- Computer Algorithms
- Web Programming

Conference Reviewer

2014-Present

- IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS, 2019)
- ACM International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT 2019), member of **Artifact Evaluation Committee**
- IEEE/ACM Transactions on Networking (IEEE/ACM ToN, 2019)
- IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS, 2019)
- IEEE International Symposium on Bioelectronics and Bioinformatics (IEEE ISBB 2015)
- IEEE International Symposium on Bioelectronics and Bioinformatics (IEEE ISBB 2014)

Technical Skills

System Verilog, C/C++, Python, Java, ISE, Vivado, Quartus, ModelSim, VCS, Design Compiler, Pytorch, Matlab, Vivado HLS

Talks & attended conferences

- USENIX Symposium on Networked Systems Design and Implementation (NSDI) 2020. Feb. 2020
- Talk and lightening talk at Center for Networked Systems (CNS) 2019. Oct. 2019
- Google Networking Research Summit 2019. Mar. 2019
- USENIX Symposium on Networked Systems Design and Implementation (NSDI) 2019. Feb. 2019
- Talk at Center for Networked Systems (CNS) 2017. Oct. 2017
- Special Interest Group on Data Communication (SIGCOMM) 2017. Aug. 2017
- Talk (recorded video) at ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2017. Apr. 2017
- Poster presentation and lightening talk at the Center for Future Architecture Research (C-FAR). Dec. 2016
- International Symposium on High-Performance Computer Architecture (HPCA) 2015. Feb. 2015

Awards

- NSDI 2020 Student Grant for Conference Attendance Feb. 2020
- NSDI 2019 Student Grant for Conference Attendance Feb. 2019
- Fellowship for Technology Management and Entrepreneurism certificate program in Institute of Global Entrepreneurship, UCSD 2017 - 2018
- Qualcomm Fellow-Mentor-Advisor (FMA) Fellowship 2015 - 2016
- Fellowship for Ph.D. from University of California at San Diego 2013 - 2014
- Distinguished project winner for “Biomedical signal processing and digital circuit implementation for wireless medical care system based on Body Area Networks (BAN)”, Electrical Engineering top projects competition Jun. 2012
- Scholarship for Minor in English, Sharif University of Technology 2010 - 2013
- Ranked among top 0.1% in the Nationwide University Entrance Exam 2008

Graduate Coursework

Data Communication Networks, Parallel Computer Architecture, Advanced Micro-architecture, Validation and Prototyping of Embedded Systems, Operating Systems, Computer Communication Networks, Advanced Compiler Design, Data Mining and Analytics, Principle of Database Systems, Computer Interface Circuits