

Bitarouhani

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Research Interests Large-scale Machine Learning, Deep Learning, Big Data Analysis with Low Dimensional Models, Algorithm Design on Clusters and Emerging Computing Platforms, HW/SW Co-design, Distributed Optimization, Low Power Computing, and Embedded Systems

Education **University of California, San Diego** Jan 2016-Present
Ph.D student, Electrical and Computer Engineering
Advisor: Prof. Farinaz Koushanfar

Rice University, Houston, TX Aug 2013-Dec 2015
M.Sc in Electrical and Computer Engineering - GPA (4.12/4.00)
Advisor: Prof. Farinaz Koushanfar

Sharif University of Technology, Tehran Sep 2009-May 2013
B.Sc in Electrical Engineering- GPA (18.35/20.00)

Publications [1] **B. Rouhani**, A. Mirhoseini, and F. Koushanfar. "DeLight: Adding Energy Dimension To Deep Neural Networks" In Proceedings of International Symposium on Low Power Electronics and Design (ISLPED), 2016

[2] **B. Rouhani**, A. Mirhoseini, E. Songhori, and F. Koushanfar. "Automated Real-Time Analysis of Streaming Big and Dense Data on Reconfigurable Platforms." ACM Transactions on Reconfigurable Technology and Systems (TRETs), 2016

[3] **B. Rouhani**, A. Mirhoseini, and F. Koushanfar. "Going Deeper than Deep Learning for Massive Data Analytics under Physical Constraints" In proceedings of International Conference on Hardware/Software Co-design and System Synthesis (CODES+ISSS), 2016.

[4] A. Mirhoseini, **B. Rouhani**, E. Songhori, and F. Koushanfar. "Chime: Checkpointing Long Computations on Intermittently Energized IoT Device." IEEE Transactions on Multi-Scale Computing Systems (TMSCS), 2016

[5] A. Mirhoseini, **B. Rouhani**, E. Songhori, and F. Koushanfar. "PerformML: Performance Optimized Machine Learning by Platform and Content Aware Customization." Proc. Design Automation Conference (DAC), 2016

[6] **B. Rouhani**, E. Songhori, A. Mirhoseini, and F. Koushanfar. "SSketch: An Automated Framework for Streaming Sketch-based Analysis of Big Data on FPGA." Field-Programmable Custom Computing Machines (FCCM), 2015

[7] A. Mirhoseini, E. Songhori, **B. Rouhani**, and F. Koushanfar. "Flexible Transformations For Learning Big Data." Short Paper, ACM Special Interest Group for the Computer Systems Performance Evaluation Conference, (SIGMETRICS), 2015

Preprints [1] **B. Rouhani**, A. Mirhoseini, and F. Koushanfar. "*subject: Holistic Data and Resource-Aware Large-Scale Deep Learning.*" Under Anonymous Review

[2] **B. Rouhani**, M. Sadegh Riazi, and F. Koushanfar. "*subject: Privacy-Preserving Deep Learning.*" Under Anonymous Review

Patents [1] **B. Rouhani**, A. Mirhoseini, and F. Koushanfar. "MobiDeep: Making Sense of Mobile Context by Deep Learning". Under review for US patenting, Application No. 62294215, 2016.

[2] **B. Rouhani**, A. Mirhoseini, E. Songhori, and F. Koushanfar. "Automated Real-Time Analysis of Streaming Big and Dense Data" Under review for US patenting, Application No. 62329826, 2016.

- Workshop Presentations**
- [1] "Data- and Platform-Aware Large Scale Machine Learning", Annual Data Science Meet-up, Rice University, 2015
 - [2] "Automated Sketch-based Analysis of Big Data on FPGA", International Conference on Computational Photography (ICCP), 2015
 - [3] "Design and Implementation of Automatic License-Plate Recognition", Best B.Sc. Thesis Award, Sharif University, 2013

Professional Experiences

Research Intern Summer 2016

- Microsoft Research, Redmond, WA
 - Sensing and Energy Research Group

Graduate Research Assistant 2013-Present

- University of California, San Diego
- Rice University

Teaching Assistant 2011-Present

- University of California, San Diego
 - Security of Hardware Embedded Systems, Spring 2016
 - Advanced Digital Design, Fall 2016
- Rice University
 - Advanced Digital Hardware Design, Implementation, and Optimization, Fall 2015
 - Design and Analysis of Secure Embedded Systems for IoT era, Spring 2015
- Sharif University
 - Discrete time Signal Processing (DSP), Fall 2012
 - Principle of Electrical Engineering, Fall 2012
 - Signals and Systems, Fall 2011
 - Logic Circuits and Lab, Fall 2011
 - Electronic Principles and Lab, Spring 2011

Lecturer 2009-2012

- Teaching Physics, Mathematics, and C++ to high school students, Tehran

Computer Skills

- **Programming skill:** C, C++, Python, Verilog (HDL), Java, MATLAB, R
- **Parallel programming:** MPI, OpenMP, OpenCL, CUDA
- **Design Tools:** Xilinx Design Tools (ISE, Vivado HLS, Vivado), Modelsim, System Generator, Code Composer Studio, Codevision AVR, Hspice, ADS, Altium Protel 99 SE
- **Hardware:** Xilinx Virtex/Spartan FPGAs, WARP

Honors and Awards

- Rice Honors Student, GPA: 4.12/4.00
- Electrical and Computer Engineering Department Fellowship, Rice University, 2013
- Adaptive Computing and Embedded Systems Lab Fellowship, Rice University, 2013
- Exempted from Nationwide M.Sc. Entrance Exam as an Exceptionally Talented Undergraduate, Sharif University, 2013
- Best Electrical Engineering B.Sc Thesis Award, Sharif University, 2013
- Ranked 4th among 200⁺ Electrical Engineering Students, Sharif University, 2013
- Ranked 69th among 400,000⁺ Participants in the Nationwide University Entrance Exam for B.Sc Degree, 2009

Professional Services

- President and Executive Committee Member, Women ExCEL (Electrical and Computer Engineering Leaders), Rice University, 2013-2015
- Research project mentor, Adaptive Computing and Embedded Systems Lab, Summer 2014-Present
- External Reviewer:
 - Applied Cryptography and Network Security Conference (ACNS), 2016, IEEE Symposium on Security and Privacy (SP), 2015, IEEE Symposium on Hardware-Oriented Security and Trust (HOST), 2015, Field-programmable Logic and Applications Conference (FPL), 2015, Design Automation Conference (DAC), 2014-2015, The Network and Distributed System Security Symposium (NDSS), 2016

Related Coursework

- Data Mining and Statistical Learning, Algorithms, Parallel Programming, Security of Embedded Systems, Signals and Systems, Digital Signal Processing, Random Processes, Operational Research, Computer Systems Architecture

References

Farinaz Koushanfar
Professor and Henry Booker Faculty Scholar of Electrical and Computer Engineering,
University of California, San Diego

Jie Liu
Principal Researcher and Research Manager,
Microsoft Research NExT

Tara Javidi
Professor of Electrical and Computer Engineering,
University of California, San Diego

Behnaam Aazhang
J.S. Abercrombie Professor in Electrical and Computer Engineering,
Rice University