Bita Darvish Rouhani

Contact Information	University of California, San Diego 9500 Gilman Drive, La Jolla, CA 92093 +1(281)-795-9094	bita@ucsd.edu `http://acsweb.ucsd.edu/~bdarvish`

Research Interests

Big Data Analytics, Deep Learning, Algorithm Design on Clusters and Emerging Computing Platforms, Computer Architecture, HW/SW Co-design, Distributed Optimization, Low Power Computing, and Energy Harvesting Embedded Systems

Education

University of California, San Diego   Jan 2016-Present

Ph.D. student, Electrical and Computer Engineering- GPA (4.00/4.00)
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)

Professional Experiences

Research Intern

- Microsoft Research, Redmond, WA
    - Computer Architecture Research Group   Summer 2017
    - Sensing and Energy Research Group   Summer 2016

Graduate Research Assistant   2013-Present

- University of California, San Diego
- Rice University

Teaching Assistant   2011-Present

- University of California, San Diego
    - Security of IoT Systems, Winter 2017
    - Advanced Digital Design, Fall 2016
    - Security of Hardware Embedded Systems, Spring 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

Honors and Awards	• **Microsoft Ph.D. Fellowship**, 2017

Honors and Awards

- **Microsoft Ph.D. Fellowship**, 2017
- **Computing Research Association Woman Graduate Cohort Scholarship**, 2016
- **Rice University Honors Student**, GPA: 4.12/4.00
- **DAC Richard Newton Young Student Scholarship**, 2014
- **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

Selected Publications

[1] **B. Rouhani,** A. Mirhoseini, and F. Koushanfar. "Deep^3: Leveraging Three Levels of Parallelism for Efficient Deep Learning", In Proceedings of Design Automation Conference (DAC), 2017

[2] **B. Rouhani,** A. Mirhoseini, and F. Koushanfar. "RISE: An Automated Framework for Real-Time Intelligent Video Surveillance on FPGA", ACM Transactions on Embedded Computing Systems (TECS), 2017

[3] A. Mirhoseini, **B. Rouhani,** E. Songhori and F. Koushanfar. "ExtDict: Extensible Dictionaries for Data- and Platform-Aware Large-Scale Learning", In Proceedings of International Parallel & Distributed Processing Symposium (IPDPS) ParLearning workshop, 2017 (**Best paper award**)

[4] **B. Rouhani,** M. Ghasemzadeh, and F. Koushanfar. "Real-time Causal Internet Log Analytics by HW/SW/Projection Co-design", Hardware Demo in Proceedings of IEEE International Symposium on Hardware Oriented Security and Trust (HOST), 2017

[5] **B. Rouhani,** M. Sadegh Riazi, and F. Koushanfar. "DeepSecure: Scalable Provably-Secure Deep Learning", IEEE International Conference on High Performance Computing and Communications (HPCC), 2017

[6] **B. Rouhani,** A. Mirhoseini, and F. Koushanfar. "TinyDL: Just-in-Time Deep Learning Solution for Constrained Embedded Systems", In Proceedings of International Symposium on Circuits & Systems (ISCAS), 2017

[7] **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

[8] **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 (**Selected as one of the notable books and articles of 2016 by Computing Reviews**)

[9] **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.

[10] 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

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

[12] **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

[13] 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	[14] **B. Rouhani**, M. Samragh, T. javidi, and F. Koushanfar. "CuRTAIL: ChaRacterizing and Thwarting AdversarIal deep Learning", arXiv preprint arXiv:1709.02538, 2017
	[15] **B. Rouhani**, M. Ghasemzadeh, and F. Koushanfar. "subject: Streaming-based Real-time Analysis of Causal Bayesian Networks Using FPGA", Under Anonymous Review, 2017
Patents	[1] **B. Rouhani**, A. Mirhoseini, and F. Koushanfar. "MobiDeep: Making Sense of Mobile Context by Deep Learning". U.S. patent pending, Application No. 62294215, 2016
	[2] **B. Rouhani**, M. Ghasemzadeh, and F. Koushanfar. "Automated Scalable Framework for Dynamic Causal Bayesian Learning on FPGA" Provisional U.S. patent, Application No. 62452880, 2017
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

Computer Skills

- **Programming skill:** C, C++,Python, Verilog (HDL), Java, MATLAB, R
- **Parallel programming:** MPI, OpenMP, OpenCL , CUDA
- **Machine Learning Libraries:** TensorFlow, Theano, Caffe, Keras
- **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

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

Related Coursework

- Data Mining and Statistical Learning, Algorithms, Parallel Programming, Computational Science, Advanced Digital Hardware Designs, Signals and Systems, Digital Signal Processing, Random Processes, Computer Systems Architecture

References   Available upon request