Ebrahim M. Songhori

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Employment Experiences

- **Software Engineer Intern at Google**, Mountain View, CA — Summer 2016
  Evaluating machine learned search retrieval methods in Google Shopping.
- **Software Engineer Intern at Google**, Mountain View, CA — Summer 2015
  Implemented a monitoring system for Google Shopping Infrastructure which observes an internal data channel, notices anomaly via statistic analysis, and issues alerts.
- **Software Engineer Intern at Nadco.**, Tehran, Iran — 2009—2010
  Designed and implemented of an application and compiler for educational robots in Windows platform using C# in an robotic startup (www.nad-co.com).
- **Course Instructor**, Tehran, Iran — 2007—2010
  Instructor of sophomore and junior high school Physics.

Education

- **Ph.D. in Electrical and Computer Engineering** — January 2012—expected January 2017
  Rice University, TX, GPA: 3.95/4
  Supervisor: Prof. Farinaz Koushanfar (University of California, San Diego)
  Visitor student in University of California, San Diego, CA since January 2015.

- **B.Sc. in Computer Engineering** — 2007—2011
  University of Tehran, Iran, GPA: 17.94/20

Technical Skills

- **Programming languages:** C/C++, C#, Python, Java, JavaScript, HTML/CSS
- **HDL:** Verilog, VHDL;
- **Parallel programming:** OpenMPI, OpenMP, Cilk, Cilk++, CUDA, Pthread
- **Other technologies:** Git, Amazon EC2, Xilinx ISE, ModelSim, Xilinx AutoESL, MATLAB, MapReduce, GraphLab, Apache Hadoop

Technical Projects

- **TinyGarble** — 2015
  An open-source and academic framework for privacy-preserving computation based on the Garbled Circuit protocol and hardware synthesis (available in TinyGarble Github).

Publications

- **Songhori, Ebrahim M.**, Shaza Zeitouni, Ghada Dessouky, Thomas Schneider, Ahmad-Reza Sadeghi, and Farinaz Koushanfar. "GarbledCPU: a MIPS processor for secure computation in hardware." In Proceedings of the 53rd Annual Design Automation Conference, p. 73. ACM, 2016.
- Mirhoseini, Azalia, Bita Darvish Rouhani, **Ebrahim M. Songhori**, and Farinaz Koushanfar. "PerformML: performance optimized machine learning by platform and content aware customization." In Proceedings of the 53rd Annual Design Automation Conference, p. 20. ACM, 2016.

- Mirhoseini, Azalia, Bita Darvish Rouhani, **Ebrahim Songhori**, and Farinaz Koushanfar. "Chime: Checkpointing long computations on intermittently energized IoT devices." In IEEE Transactions on Multi-Scale Computing Systems (TMSCS), p. 1. IEEE, 2016.
- **Songhori, Ebrahim M.**, Siam U. Hussain, Ahmad-Reza Sadeghi, Thomas Schneider, and Farinaz Koushanfar. "TinyGarble: Highly compressed and scalable sequential garbled circuits." In Security and Privacy (SP), 2015 IEEE Symposium on, pp. 411-428. IEEE, 2015.
- **Songhori, Ebrahim M.**, Siam U. Hussain, Ahmad-Reza Sadeghi, and Farinaz Koushanfar. "Compacting privacy-preserving k-nearest neighbor search using logic synthesis." In Design Automation Conference (DAC), 2015 52nd ACM/EDAC/IEEE, pp. 1-6. IEEE, 2015.
- **Songhori, Ebrahim M.**, Azalia Mirhoseini, Xuyang Lu, and Farinaz Koushanfar. "AHEAD: automated framework for hardware accelerated iterative data analysis." In Proceedings of the 2015 Design, Automation & Test in Europe Conference & Exhibition (DATE), pp. 942-947. EDA Consortium, 2015.
- Rouhani, Bita Darvish, **Ebrahim M. Songhori**, Azalia Mirhoseini, and Farinaz Koushanfar. "SSketch: An Automated Framework for Streaming Sketch-based Analysis of Big Data on FPGA." In Field-Programmable Custom Computing Machines (FCCM), 2015 IEEE 23rd Annual International Symposium on, pp. 187-194. IEEE, 2015.
- Mirhoseini, Azalia, Eva Dyer, **Ebrahim M. Songhori**, Richard Baraniuk, and Farinaz Koushanfar. "Rankmap: A platform-aware framework for distributed learning from dense datasets." arXiv preprint arXiv:1503.08169, 2015.
- Mirhoseini, Azalia, **Ebrahim M. Songhori**, Bita Darvish Rouhani, and Farinaz Koushanfar. "Flexible Transformations For Learning Big Data." In Proceedings of the 2015 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems, pp. 453-454. ACM, 2015.
- **Songhori, Ebrahim M.** "ShuFFLE: Automated framework for hardware accelerated iterative big data analysis." Master Thesis, Rice University April, 2014.
- Mirhoseini, Azalia, **Ebrahim M. Songhori**, and Farinaz Koushanfar. "Idetic: A high-level synthesis approach for enabling long computations on transiently-powered ASICs." In Pervasive Computing and Communications (PerCom), 2013 IEEE International Conference on, pp. 216-224. IEEE, 2013.
- Mirhoseini, Azalia, **Ebrahim M. Songhori**, and Farinaz Koushanfar. "Automated checkpointing for enabling intensive applications on energy harvesting devices." In Proceedings of the 2013 International Symposium on Low Power Electronics and Design, pp. 27-32. IEEE Press, 2013.

Awards and Honors

- **Fellowship**, Houston, TX 2012
  Rice University ECE Graduate Fellowship.
- **Olympiad**, Tehran, Iran 2006—2010
  Silver Medal in the National Scientific Olympiads for Students in Physics.

Extracurricular Activities

- President, The Duncan Hall Fridge Room Club, Rice University, Houston, TX. 2013—2014
- Secretary, ACM Student Chapter, ECE, University of Tehran, Iran. 2009—2010
- Editor, "88, The Reformist Students of University of Tehran", the socio-political student publication, University of Tehran, Iran. 2008—2009
- Secretary of Public Relations, The Central Council of Student Association of Collage of Engineering, University of Tehran, Iran. 2009—2010