MOHAMMAD HOSSEIN ASKARI HEMMAT

Personal Information

✉ m.h.askari.hemmat@gmail.com
http://hossein1387.github.io/
https://github.com/hossein1387/

Research Interest

- Deep Learning Acceleration
- Computer Architecture

Education

- **Ph.D. student** in Electrical and Computer Engineering 2018-
  Polytechnique Montreal, Montreal, Quebec, Canada,
  IFT6135 Representation Learning (Deep Learning)
  ELE8307 Rapid prototyping of digital systems (Designing a CNN accelerator on FPGA)
- **Master of Applied Science** in Electrical and Computer Engineering 2013-2015
  Concordia University, Montreal, Quebec, Canada
  Total GPA: 4.15/4.3
- **Bachelor of Science** in Electrical Engineering 2008-2012
  Shahid Bahonar University of Kerman, Iran
  Total GPA: 3.2/4

Publications

- RISC-V Barrel Processor For Deep Neural Network Acceleration
  MohammadHossein AskariHemmat Olexa Bilaniuk, Sean Wagner, Yvon Savaria, Jean-Pierre David, FCCM 2020
- U-Net Fixed-Point Quantization for Medical Image Segmentation
  MohammadHossein AskariHemmat, Sina Honari, Lucas Rouhier, Christian S. Perone, Julien Cohen-Adad, Yvon Savaria, Jean-Pierre David, MICCAI 2019
- Towards code generation for ARM Cortex-M MCUs from SysML activity diagrams.
  M. H. Askari-Hemmat, O. A. Mohamed and M. Boukadoum, ISCAS - International Symposium on Circuits and Systems 2016, Montreal
- Formal Modeling, Verification and Implementation of a Train Control System.
  M. H. Askari-Hemmat, O. A. Mohamed and M. Boukadoum, ICM 2015 - 27th International Conference on Microelectronics
- Automatic Mapping of AF3 specifications to ARM Cortex-M based FRDM platform.
  M. H. Askari-Hemmat, O. A. Mohamed and M. Boukadoum, ICM 2014 - 26th International Conference on Microelectronics
- Duplication Avoidance for Energy Efficient Wireless Sensor Networks.
  A.Mahani, **M. H. Askari-Hemmat** and Yousef S. Kavian, 8th International Symposium on Communication Systems, Networks & Digital Signal Processing (CSNDSP), 2012

Work Experience

- **ASIC Verification Engineer** at Microsemi a Michrochip company (June 2016 to June 2018)
  - Worked on the next generation of Optical Transport Network (OTN) processors.
  - Writing tests in SystemVerilog using UVM methodology.
  - Developed Ethernet traffic generator in C++.
  - Developed scripts for analyzing test outputs.

- **Software Engineer** at TRU Simulation + Training (2015-2016)
  - Developed software drivers for various high speed avionic protocols in C++: Airbus VCOM, AFDX, A429
  - Built custom linux kernels as well as maintaining linux machines for the hosts and re-hosts of the test station

- Developed scripts for running various avionic simulation packages

Workshops and Talks

- **CMC Workshop: Accelerating AI - Challenges and Opportunities in Cloud and Edge Computing:**
  In this talk, I reviewed the most effective methods for accelerating computation in Deep Neural Networks. Specifically, I talked about Quantization. Quantization in Deep Learning is a technique to reduce power, memory and computation time of deep neural networks. I talked about how one can improve the performance of a DNN using both software and hardware solutions.
  https://www.cmc.ca/workshop-accelerating-ai-montreal/
- **Bahonar University Of Kerman: New Methods of Designing Digital Systems:**
  I organized and presented a one day workshop on new methods of designing digital systems. The workshop was concentrated about how to use open source hardware tools and IPs with a special focus on risc-v ecosystem. Electrical Engineering Department of Shahid Bahonar University of Kerman, August 2017.
  http://hossein1387.github.io/riscv_workshop/index_en.html

Honors and Awards:

- Graduate Student Support Program (GSSP) scholarship — Apr 2014
- ReSMiQ Scholarship for M.SC students — Feb 2014
- Partial Tuition Scholarship for International Students — May 2013
- Graduate Student Support Program (GSSP) scholarship — May 2013
- ReSMiQ Scholarship for M.SC students — Jan 2013

Languages

Persian (Native), English (Fluent), French (B2)

Computer Skills:

- Machine Learning Frameworks: PyTorch
- Programming Languages: C/C++, Python, Scala, Bash
- Hardware Description Languages: SystemVerilog, Chisel, SystemC
- Version Control Management: Git, SVN

References

- **Jean Pierre David** (PhD Supervisor)
  Electrical and Computer Engineering Department
  Ecole Polytechnique de Montral
  Montreal, Quebec, Canada
  E-mail: JPDavid@polymtl.ca

- **Yvon Savaria** (PhD Co-Supervisor)
  Electrical and Computer Engineering Department
  Ecole Polytechnique de Montral
  Montreal, Quebec, Canada
  E-mail: yvon.savaria@polymtl.ca