Parnian Mokri

CONTACT INFORMATION

https://sites.tufts.edu/pmokri
161 College Ave
Medford, MA 02155
703-4636401
pmokri01@tufts.edu

RESEARCH INTERESTS

Computer Architecture, Workload Characterization, Designing Application-Specific Hardware on FPGAs and Embedded Systems, LLVM/clang Compilers

EDUCATION

Tufts University, Medford, MA Ph.D., Electrical Engineering, *Expected:* Spring 2020

Ph.D., Electrical Engineering, *Expected:* Spring 2020

- *Many Accelerator Systems: designing application specific hardware; their memory and control system selection in heterogeneous architecture* Advisors: Mark D. Hempstead

George Mason University, Fairfax, VA

M.S., Computer Engineering, May 2014

- *Designing bio-neuron in hardware*: Implementing optimal Izhikevich and Hodgkin-Huxley model in Xilinx FPGAs and their control system Adviser: Houman Homayoun, Ph.D

Tehran Azad University, Tehran, Iran

B.S., Computer Engineering (Hardware), May 2009

- *Heart arrhythmia detection using FPGA* designing an optimal R-R detection algorithm based on physionet ECG signals
- *System level hardware design and simulation with SystemAda* Combining Ada and VHDL to describe computer architecture at transaction level model (TLM)
- Advisor: Zain Navabi, Ph.D Tehran University

RESEARCH EXPERIENCE

Tufts University and Drexel University Aug 2015 to present
Developed tools to find Shared Accelerators in Early Stage of Designs, Adviser: Dr. Mark Hempstead

George Mason University June 2012 to May 2014
Developed frameworks for Neuromorphic Computing Models on FPGAs with limited area , Adviser: Houman Homayoun

Tehran University Sept 2005 to Aug 2009
Developed System-Ada: A language for designing embedded system at TLM level, Adviser: Zain Navabi

SKILLS

CAD Tools: C and C++ HLS, VHDL, Vivado Xilinx, Vivado HLS Xilinx SDSoC, Quartez, SymphonicC, Virtuoso , Hotspot
Computer Architecture: Sniper multi-core simulator, GEM5, Booksim
Scripting: bash, git, python
Compilers: clang/llvm, gdb
Kernels : linux, windows
Programming languages : C++, Ada, python

CURRENT PROJECTS

1. Shared Accelerator System on Chip: Implementing shared accelerators and their memory system to minimize energy per instruction on ASIC and Xilinx FPGAs (Zynq and Ultra-scale)

2. Fingerprinting Workloads to Find Shared Accelerators: Developed a methodology to quickly detect Shared Accelerators at early-stage using static and dynamic behavior of workload. Finding similarities between workloads are computationally expensive; we propose a method based on the workload's characteristics that reduce the process by at least 10% with zero false negatives.

3. Secure Many Accelerators: Designing a secure accelerator with their memory system.

Awards

Best Regular Paper Award Negin Mahani, Parnian Mokri, Zainalabedin Navab Award best regular paper IEEE EWDT08 Symposium Award Feb 2009

Peer reviewed Conferences and Workshops

1. Improving HLS with Shared Accelerators: A Retrospective Parnian Mokri, Mark Hempstead Latte workshop 2021
2. Early-stage automated accelerator identification tool for embedded systems with limited area Parnian Mokri, Mark Hempstead ICCAD 2020
3. Detecting Coarse-Grained Reconfigurable kernels using ReconfAST **Parnian Mokri**, Mark Hempstead, BARC 2018
4. Detecting Coarse-Grained Reconfigurable kernels using ReconfAST **Parnian Mokri**, Mark Hempstead, Micro 17 - Workshop
5. **Parnian Mokri**, Mark Hempstead, Stockpile of Accelerators: ReconfASTs: Early-stage Identification of Reconfigurable Accelerators with Annotated Abstract Syntax Tree, BARC, 2017
6. Stockpile of Accelerators: A Methodology to increase accelerator coverage, **Parnian Mokri**, Mark Hempstead, BARC 2016
7. Siddharth Nilakantan, **Parnian Mokri**, Mike Lui and Mark Hempstead, SIGIL A tool for assisting acceleration selection **HPCA workshop**, Jan 2015

Teaching Experience

Teaching Assistant Springs 2014–17

ECE 194 Advanced Computer Architecture: Spring 2019, Instructor: Mark Hempstead, Ph.D., Computer Science, Electrical Engineering Department, Tufts University: Designing labs, designing solutions for homework and labs, help with students final projects, office hours and grading

Introduction to Computation: Spring 2018, Instructor: Brain Tracey, Ph.D., Computer Science, Electrical Engineering Department, Tufts University: Designing solutions for homework and labs, teaching labs, office hours and grading

ECE 194 Advanced Computer Architecture: Spring 2016, Instructor: Mark Hempstead, Ph.D., Computer Science, Electrical Engineering Department, Tufts University: Designing labs, designing solutions for homework and labs, help with students final projects, office hours and grading

Computer Architecture: Spring 2015 ; Instructor: Karkal Prabhu, Ph.D Electrical Engineering Department, Drexel University: Holding Weekly Review Classes, designing quizzes and grading

Computer Networks: Fall 2014, Instructor: Karkal Prabhu, Ph.D, Electrical Engineering Department, Drexel University: : Holding Weekly Review Classes, designing quizzes and grading

Clubs and leadership

- President and founder of Tufts Computer Architecture Club
- Member and former chair of Student life at Tufts Graduate Student Council: Organizer for Coffee hours with deans, and venting events