Mario J. Badr

Contact Information

The Edward S. Rogers Department of Electrical and Computer Engineering
Room 1107, Sandford Fleming Bldg.
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University of Toronto

Education

University of Toronto, Toronto, Ontario, Canada

Ph.D., Computer Engineering, September, 2013 - Present

Dissertation: "Developing Novel Evaluation Methodologies for Assessing Multi-Threaded Applications"
Advisor: Natalie Enright Jerger

University of Toronto, Toronto, Ontario, Canada

M.A.Sc, Computer Engineering, January, 2014

Thesis: "Synthetic Traffic Models That Capture Cache Coherent Behaviour"
Advisor: Natalie Enright Jerger

University of Toronto, Toronto, Ontario, Canada

B.A.Sc, Electrical Engineering, May, 2011

Research Interests

Many/multi-core architectures, cache coherence, interconnection networks, application modelling, machine learning, design space exploration.

Industry Experience

Qualcomm Research Silicon Valley, Santa Clara, California, USA

Intern *May, 2015 - August, 2015*

Used the Multicore Asynchronous Runtime Environment (MARE) to develop a complex application, with domain-specific kernels in C++, openCL, and Hexagon. Provided feedback to the MARE team on performance issues and bottlenecks.

Environment Canada, Toronto, Ontario, Canada

Intern *June, 2009 - August, 2010*

Implemented new features and bug fixes for the NinJo workstation, a java-based tool for meteorologists. Notable projects include upgrading the visualization framework for lightning strikes to be faster and use significantly less memory, incorporating storm cell data for Canada, and helping to create a configurable view of weather data for a given storm cell.

Awards

Roberto Padovani Intern Scholarship - *$5,000* *2015*

Awarded to seven Qualcomm Research interns across the globe for outstanding technical contributions made during their internship.

Thomas Noakes & Queen Elizabeth II Graduate Scholarship - *$15,000* *2015*

Awarded for excellence in science and technology.

TA Teaching Excellence Award - *$200* *2015*

Awarded to four recipients across the three University of Toronto campuses based on nominations, references, and teaching philosophy.

Peer-Reviewed Publications

Joshua San Miguel, **Mario Badr**, and Natalie Enright Jerger. Load Value Approximation. In Proceedings of the International Symposium on Microarchitecture (MICRO), to appear, December 2014. (acceptance rate: 19%)

Mario Badr and Natalie Enright Jerger. SynFull: Synthetic Traffic Models Capturing a Full Range of Cache Coherence Behaviour. In Proceedings of the International Symposium on Computer Architecture (ISCA), June 2014. (acceptance rate: 18%)

Workshops, Presentations, and Posters

International Workshop on Parallelism in Mobile Platforms

Paper *June, 2015*

Ajaykumar Kannan, **Mario Badr**, Parisa Khadem Hamedani and Natalie Enright Jerger.
Offloading to the GPU: An Objective Approach

International Symposium on Microarchitecture

Poster *December, 2014*

Joshua San Miguel, **Mario Badr**, and Natalie Enright Jerger.
Load Value Approximation

International Symposium on Computer Architecture

Presentation *June, 2014*

Mario Badr and Natalie Enright Jerger.
SynFull: Traffic Models Capturing Cache Coherence Behaviour

Teaching Experience

Engineering Strategies and Practice, 1st Year Undergraduate

Teaching Assistant *Tutorials*

Supervised students through the design process for a given project and provided feedback on written design documents, with a focus on stimulating an engineering methodology to design.

Computer Fundamentals, 1st Year Undergraduate

Teaching Assistant *Tutorials, Computer Lab*

Taught the fundamentals of computer programming in C, including data structures, recursion, and sorting algorithms.

Computer Organization, 3rd Year Undergraduate

Teaching Assistant *Computer Lab*

Supervised and helped students implement a simple von Neumann processor using verilog.

Computer Architecture, 4th Year Undergraduate & Graduate

Teaching Assistant *Tutorials, Computer Lab*

Taught computer architecture concepts, including caches, pipelining, out-of-order cores, and cache coherence.

University Service

Appointed Graduate Representative *2015-2016*

Executive Committee of Faculty Council - Faculty of Applied Science & Engineering

Graduate Representative *2015-2016*

Faculty Council - Faculty of Applied Science & Engineering

President *2015-2016*

Electrical and Computer Engineering Graduate Students' Society

Member *January - April 2014*
Bargaining Support Committee

Steward *2013-2014*
Canadian Union of Public Employees

Social Event Coordinator *2012-2013*
Electrical and Computer Engineering Graduate Students' Society

Professional Development

Teaching in Higher Education

One semester course *2015*
Learned more about teaching theories and styles and was observed by peers while teaching a tutorial on Computer Architecture. Also developed a course syllabus for a non-existing course.

Prospective Professors in Training

Thirteen Seminars, One semester course *2014-2015*
Began preparations for becoming a professor in academia, attending several seminars and preparing a preliminary teaching dossier and research statement. Also completed a course on Teaching Engineering in Higher Education.

Mini-MBA

Ten Classes *2015*
Gained an understanding of fundamental business concepts and applied what I learned in a group-based case competition.

Oral Presentation Skills

Five Classes *2014*
Examined presentation structure and the use of visual aids. Exchanged feedback with peers and the instructor on individual oral presentations.

Prewriting Strategies for Developing and Organizing Your Ideas

Four Classes *2014*
Learned several new strategies for developing and organizing ideas before (and during) the writing process.

NSERC Proposal Workshop

Three Classes *2014*
Examined features of good and bad proposal writing, and exchanged feedback with peers on our own NSERC proposals.

Teaching Fundamentals Certificate

Six Workshops *2012-2013*
Improved my teaching skills with workshops on pedagogy, research, academic integrity, and students in difficulty.