

Seyed Majid Zahedi | CV

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Research Interests

Computer Systems. Scheduling and Resource Management, Energy Efficiency

Computer Architecture. Datacenter Systems, Power and Performance Analysis, Quality of Service

Economics and Computation. Algorithmic Game Theory, Multi-agent Systems, Fair Division

Education

Duke University PhD in Computer Science	2012-2018
University of Tehran MS in Software Engineering	2009-2012
University of Tehran BS in Software Engineering	2005-2009

Experience

University of Waterloo Assistant Professor, <i>ECE Department, Waterloo, ON</i>	2018-Present
Duke University Graduate Research Assistant, <i>CS Department, Durham, NC</i>	2012-2018
Qualcomm Research Intern, <i>Raleigh, NC</i>	2017
Institute for Research in Fundamental Sciences (IPM) Research Assistant, <i>School of Computer Science, Tehran, Iran</i>	2011-2012
University of Tehran Graduate Research Assistant, <i>ECE Department, Tehran, Iran</i>	2009-2011

Paper Awards

Best Paper Award, HPCA Amdahl's Law in the Datacenter Era: A Market for Fair Processor Allocation	2018
Research Highlight, Communications of the ACM The Computational Sprinting Game	2018

Top Picks Honorable Mention, IEEE Micro The Computational Sprinting Game	2016
Best Paper Award, ASPLOS The Computational Sprinting Game	2016
Top Picks, IEEE Micro REF: Resource Elasticity Fairness with Sharing Incentives for Multiprocessors	2014

Academic Honors

Outstanding Ph.D. Preliminary Exam Award CS Department, <i>Duke University</i>	2015
Duke University Graduate School Fellowship CS Department, <i>Duke University</i>	2012
3rd in Graduating Class of MS in Computer Engineering ECE Department, <i>University of Tehran</i>	2012
Exceptional Talents Admission to MS in Computer Engineering ECE Department, <i>University of Tehran</i> University of Tehran offered MS program admission to the top 10% students in each major.	2009
Excellent Student of Semester in Faculty of Engineering ECE Department, <i>University of Tehran</i>	2009
Top 0.2% of Nearly 400,000 Participants Iranian National University Entrance Exam	2005

Publications

Journals.....

A Win for Game Theory in the Data Center S. M. Zahedi, B. C. Lee <i>IEEE Spectrum</i> , April, 2020 (Invited)	IEEE Spectrum
Distributed Strategies for Computational Sprints S. Fan*, S. M. Zahedi*, B. C. Lee (*Co-first Authors) <i>Communications of the ACM</i> , January, 2019 (Invited) Research Highlight	CACM
Dynamic Proportional Sharing: A Game-theoretic Approach R. Freeman*, S. M. Zahedi*, V. Conitzer, B. C. Lee (*Co-first Authors) <i>Proc. of the ACM on Measurement and Analysis of Computing Systems</i> , March 2018	POMACS
Managing Heterogeneous Datacenters with Tokens S. M. Zahedi, S. Fan, B. C. Lee <i>ACM Transactions on Architecture and Code Optimization</i> , May 2018	TACO
Computational Sprinting: Architecture, Dynamics, and Strategies S. M. Zahedi, S. Fan, M. Faw, E. Cole, B. C. Lee <i>ACM Transactions on Computer Systems</i> , January, 2017 (Invited)	TOCS

Sharing Incentives and Fair Division for Multiprocessors
 S. M. Zahedi, B. C. Lee IEEE Micro
IEEE Micro, May/June, 2015 (Invited)
 Top Picks from Computer Architecture Conferences

Reliable Energy-aware Application Mapping and Voltage-frequency Island Partitioning for GALS-based NoC
 A. Mahabadi, S. M. Zahedi, A. Khonsari JCSS
Journal of Computer and System Sciences, June 2013

Conferences.....

Dynamic Proportional Sharing: A Game-theoretic Approach
 R. Freeman*, S. M. Zahedi*, V. Conitzer, B. C. Lee (*Co-first Authors) SIGMETRICS
Int'l. Conf. on Measurement & Modeling of Comp. Sys., Irvine, CA, June 2018

Amdahl's Law in the Datacenter Era: A Market for Fair Processor Allocation
 S. M. Zahedi*, Q. Llull*, B. C. Lee (*Co-first Authors) HPCA
Int'l. Symp. on High Perf. Computer Architecture, Vienna, Austria, February 2018
 Best Paper Award

Fair and Efficient Social Choice in Dynamic Settings
 R. Freeman, S. M. Zahedi, V. Conitzer IJCAI
Int'l. Joint Conf. on Artificial Intelligence, Melbourne, Australia, August 2017

Cooper: Task Colocation with Cooperative Games
 Q. Llull, S. Fan, S. M. Zahedi, B. C. Lee HPCA
Int'l. Symp. on High Perf. Computer Architecture, Austin, TX, February 2017

The Computational Sprinting Game
 S. Fan*, S. M. Zahedi*, B. C. Lee (*Co-first Authors) ASPLOS
Int'l. Conf. on Architectural Support for Prog. Lang. & Op. Sys., Atlanta, GA, April 2016
 Best Paper Award, CACM Research Highlight, IEEE Micro Top Picks Honorable Mention

REF: Resource Elasticity Fairness with Sharing Incentives for Multiprocessors
 S. M. Zahedi, B. C. Lee ASPLOS
Int'l. Conf. on Architectural Support for Prog. Lang. & Op. Sys., Salt Lake City, UT, March 2014
 IEEE Micro Top Picks

Dissertation.....

Managing Shared Resources in the Data Center Era
 S. M. Zahedi PhD Thesis
 Duke University, March 2018

Talks

Dynamic Proportional Sharing: A Game-theoretic Approach
 INFORMS (Invited), Phoenix, AZ November 2018

Dynamic Proportional Sharing: A Game-theoretic Approach
 SIGMETRICS, Irvine, CA June 2018

Amdahl's Law in the Datacenter Era: A Market for Fair Processor Allocation
 HPCA, Vienna, Austria February 2018

The Computational Sprinting Game

ASPLOS, Atlanta, GA

April 2016

REF: Resource Elasticity Fairness with Sharing Incentives for Multiprocessors

ASPLOS, Salt Lake City, UT

March 2014

Patents

Allocating Power between Multiple Central Processing Units (CPUs) in a Multi-CPU Processor Based on Total Current Availability and Individual CPU

Quality-of-service (QoS) Requirements

S. Priyadarshi, S. M. Zahedi, D. R. Hower, C. A. Waldspurger, J. T. Bridges, S. B. Patel, G. M. Tarr, C. K. Lin, R. D. Wells, H. W. Cain III November 2020
US Patent US10831254B2

Grants

Design of Intelligent Controllers to Maximize Efficiency and Guarantee Security, Privacy, and Fairness in Heterogeneous Computing and Sensing Systems

Principal Investigator, NSERC-Discovery, \$152.5K

2019-2024

Resource Management in Heterogeneous Clusters: Maximizing Efficiency and Guaranteeing Security, Privacy, and Fairness

Principal Investigator, CFI-JELF, ORF-IR, CFI-IOF, \$180K

2020-2024

Research Advising

Masters Students.....

Ali Hossein Abbasi Abyaneh (UWaterloo, 2019-)

Maizi Liao (UWaterloo, 2020-, Co-advised with W. Golab)

Fatemeh Fardno (UWaterloo, 2020-)

Pouya Kananian (UWaterloo, 2021-)

Undergraduate Students.....

Bimesh De Silva (UWaterloo, Winter 2020)

Justin Borromeo (UWaterloo, Winter 2020)

Vichara Nimnaka Wijetunga (UWaterloo, Winter 2020)

Rahul Chakravarthy (UWaterloo, Fall 2019)

Leo Liu (UWaterloo, Spring 2019)

Anthony Elliot Weston (UWaterloo, Spring 2019)

Aman Arora (UWaterloo, Winter 2019)

Thesis Committees

PhD Committee Member.....

Proposal: Chunyu Mao (UWaterloo, advisor W. Golab), Sriram Ganapathi Subramanian (UWaterloo, co-advisors M. Crowley and K. Larson)

Background Exam: Sriram Ganapathi Subramanian (UWaterloo, co-advisors M. Crowley and K. Larson)

PhD Committee Chair.....

Defense: Navid Nasr Esfahani (UWaterloo, advisor D. Stinson), Pavel Valov (UWaterloo, advisor K. Czarnecki), Hemant Surale (UWaterloo, advisor D. Vogel)

Proposal: Etinosa Ekomwenrenren (UWaterloo, advisor J. Simpson-Porco), Huanyi Chen, (UWaterloo, advisor P. Ward), Jamal Busnaina (UWaterloo, advisor C. Wilson), Haixia Peng (UWaterloo, advisor S. X. Shen)

Background Exam: Hari Govind V K (UWaterloo, advisor A. Gurfinkel), Ahmed Hussein Salamah (UWaterloo, advisor E. Yang), Fatemeh Ahmadloo (UWaterloo, advisor S. Azad)

PhD Examiner.....

Dissertation: Mohammad Shahrads (Princeton University, advisor D. Wentzclaff)

Seminar: Faruk Erkmen (UWaterloo, advisor O. M. Ramahi)

Masters Committee Member.....

Oral Exam: Sakib Chowdhury (UWaterloo, advisor W. Golab), Diego Cepeda (UWaterloo, advisor W. Golab), Sahil Pereira (UWaterloo, advisor M. Crowley)

Teaching

University of Waterloo

Instructor, *Waterloo, ON*

- o Real-time Operating Systems (Winter '21, Fall '20)
- o Operating Systems (Winter '20, Winter '19)
- o Game Theory with Engineering Applications (Fall '18, Fall '19)

Tutorials

Presenter and Co-organizer

- o Datacenter Simulation Methodologies (MICRO '14), (ISPASS '15), and (ISCA '15)
With Benjamin C. Lee, Qiuyun Llull, and Tamara Silbergleit Lehman

Iranian National Organization for Development of Exceptional Talents

High School Computer Science Teacher, *Tehran, Iran (2011-2012)*

Ehsan Private School

Middle School Geometry Teacher, *Tehran, Iran (2007-2011)*

Service

Program Committees.....

IEEE Int'l Conf. on Cluster Computing (CLUSTER '21)

Int'l. Conf. on Autonomous Agents and Multiagent Systems (AAMAS '20)

IEEE Int'l Conf. on Cluster Computing (CLUSTER '19)

Int'l. Conf. on Autonomous Agents and Multiagent Systems (AAMAS '19)

Journal Reviews (each listed only once).....

ACM Trans. on Architecture and Code Optimization (TACO)

ACM Trans. on Modeling & Perf. Eval. of Comp. Sys. (ToMPECS)

Cluster Computing: The Journal of Networks, Software Tools & App.

IEEE Access

IEEE Communications Letters (CL)

IEEE Trans. on Cloud Computing (TCC)

IEEE Trans. on Parallel and Distributed Sys. (TPDS)

Journal of Parallel and Distributed Computing (JPDC)

External Review Committees (each listed only once).....

Int'l. Conf. on Architectural Support for Prog. Lang. & Op. Sys. (ASPLOS)