MohammadReza Ebrahimi

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EDUCATION

University of Toronto, Toronto, Canada   Sep. 2018 - Present
PhD Candidate at ECE Department
  - Advisor: Ashish Khisti, PhD.

University of Tehran, Tehran, Iran   Sep. 2014 - Sep. 2017
Master of Science in Communication Systems
  - **Average: 18.85/20 (4.00/4.00) - Ranked first**
  - Thesis title: *Joint channel coding and medium access control in machine-to-machine communication.* Defended (20/20)
  - Advisors: Farshad Lahouti, PhD.
                Maryam Sabbaghian, PhD

University of Tehran, Tehran, Iran   Sep. 2010 - Sep. 2014
Bachelor of Science in Electrical Engineering - Telecommunications
  - **Average: 17.94/20 (3.86/4.00)**
  - Thesis title: *Indoor Positioning System Using Wi-Fi Fingerprinting Method.*
  - Advisor: Farshad Lahouti, PhD.

RESEARCH
INTERESTS
  - Machine learning, Probabilistic Modeling, and their application in fMRI Data Analysis
  - Graph Signal Processing
  - Information Theory and Modern Channel Coding

RESEARCH
EXPERIENCE

Centre for Addiction and Mental Health (CAMH)   Jan. 2019
The Kimel Family Translational Imaging-Genetics Laboratory (TIGRlab)   - Present
Student Researcher

  Project: *Learning Bio-Markers of Social Cognition in Schizophrenia using fMRI (SPINS study)*
  Adviosrs: *Prof. Ashish Khisti and Dr. Aristotle Voineskos*
  Applying machine learning and graph signal processing to delineate the neural pathophysiology
  underlying impaired social cognition in people with Schizophrenia Spectrum Disorders (SSD)
  with the belief that this will inform therapeutic discovery.

Center for Wireless Multimedia Communications (WMC)   Sep. 2013
University of Tehran, Tehran, Iran   - Sep. 2016
Research Assistant

  Under the supervision of Dr. Lahouti, I conducted research on two general fields: indoor positioning
  and joint channel coding and random access scheme design using factor graphs. During the *Digital
  Venture Design* course in WMC, we defined the business plan of a location-aware marketing tool for
  shopping malls, which later incorporated into a business product (*InJust*).

WORK
EXPERIENCE

Sarveen Technologies Inc.   Sep. 2016
Science and Technology Park, Tehran, Iran   - 2018
Head of Indoor Positioning Team

  Sarveen Technologies Inc. is a young but well-funded innovative company specializing in indoor po-
  sitioning, activity recognition, and IoT technologies. As the head of Indoor Positioning Team, I lead
  the development of core algorithms to create a robust and adaptive positioning solution used in a wide
  range of location-aware Sarveen products.

Publication	**M. Ebrahimi**, F. Lahouti and V. Kostina, "Coded random access design for constrained outage," *2017 IEEE International Symposium on Information Theory (ISIT)*, Aachen, 2017, pp. 2732-2736
	M. Ebrahimi, F. Lahouti, and V. Kostina, "Two-layer Coded Channel Access with Collision Resolution: Design and Analysis." *arXiv preprint*, arXiv:1909.00065, 2019.
	F. Lahouti, V. Kostina, and **M. Ebrahimi**, "Coded Random Access Mechanism for Communication Networks." *U.S. Patent Application No. 16/362,567.*
Presentation and Talks	**2017 IEEE International Symposium on Information Theory (ISIT)** *Oral Presentation, Achen, Germany (June 2017)*
	The First Toronto Workshop on Graph Spectral Machine Learning *Invited Talk, Ryerson University, Toronto, Canada (August 2019)*
Teaching Experiences	**ECE421: Introduction to Machine Learning**, University of Toronto Fall 2019, Winter2020 *Head Teacher Assistant* Instructor: Ashish Khisti, PhD
	ECE1504: Statistical Learning, University of Toronto Winter 2020 *Teacher Assistant* Instructor: Ashish Khisti, PhD
	CSC458H1F: Computer Networking Systems, University of Toronto Fall 2018, 2019 *Teacher Assistant* Instructor: Sajad Shirali-Shahreza, PhD, Yashar Ganjali, PhD
	Advanced Theory of Communications, University of Tehran Spring 2017 *Chief Teacher Assistant* Instructor: Maryam Sabbaghian, PhD
	Communication Systems II, University of Tehran Fall 2016 *Chief Teacher Assistant* Instructor: Amir Masoud Rabiei, PhD
	Wireless Communication, University of Tehran Spring 2016 *Chief Teacher Assistant* Instructor: Ali Azam Abbasfar, PhD
	Mathematics I, University of Tehran Fall 2012 *Teacher Assistant* Instructor: Mohammadreza Kolahdouz, PhD
Selected Courses	**CSC412 Probabilistic Learning**: A+ **ECE1504 Statistical Learning**: A+ **STA4273 Research Topics in Statistical ML**: A+ **ECE1762 Algorithms and DS**: A+ **Pattern Recognition**: 19/20 **Information Theory**: 18.5/20 **ECE1505H Convex Optimization**: A **Digital Signal Processing**: 18.3/20 **Stochastic Processes**: 17.04/20 **Detection and Estimation Theory**: 16.5/20 **Advance Theory of Communications**: 19.9/20 **Wireless Communication**: 20/20
Software	**Programming Languages:** Python(*proficient*), Matlab(*proficient*), Java(*familiar*), C/C++(*familiar*), Verilog(*familiar*)
	Professional Software and Toolboxes: TensorFlow, Pandas/Numpy/Matplotlib, Android programming (Android Studio), Matlab GUIDE, Java-ML, CodeVisionAVR, FL Studio (music production), LaTeX
Honors and Awards	**Ranked 1st among all communication system students** *M.Sc. degree, University of Tehran*

M.Sc. thesis nominated for the ECE school best dissertation award
University of Tehran, Tehran, Iran. (Winners TBA)

Excellent Student M.Sc. Admission Award
B.Sc. degree, University of Tehran
Entrance examination waived as an award for being among the top-10% students (Ranked 6th among 123).

Ranked 194th among 277,814 participants
In the nationwide university entrance examination in Mathematics and Physics fields for B.Sc.

REFERENCES

Farshad Lahouti, PhD.
Electrical Engineering Department
California Institute of Technology
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Maryam Sabbaghian, PhD.
School of Electrical and Computer Engineering
University of Tehran
msabbaghian@ut.ac.ir, +98(21) 6111-9725

Ashish Khisti, PhD.
Electrical and Computer Engineering Department
University of Toronto
akhisti@comm.utoronto.ca, +1(416) 978-7215