Mehraveh Salehi

Magnetic Resonance Research Center (MRRC)
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Research Interests

I am interested in developing AI models based on submodular function optimization that relate human behavior to individual brain functional connectivity and parcellation patterns as measured by fMRI.

Education

◇ **Yale University**, New Haven, CT — August 2014 - Present

- Ph.D. in Electrical Engineering
- Research area: Machine Learning, Systems Neuroscience
- Advisors: Professor R. Todd Constable, Professor Amin Karbasi

◇ **Sharif University of Technology**, Tehran, Iran — September 2010 - June 2014

- B.Sc. in Electrical Engineering (Major in Communication Systems and Networks)
- Thesis: Design and Implementation of a Signal Generator with Variable SNR
- Advisor: Professor Ali Fotowat

Awards and Honors

◇ **Facebook MAIN Award**, Montreal Artificial Intelligence and Neuroscience (MAIN) Conference — December 2018

◇ **Young Scientist Award**, 20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) — September 2017

◇ **Advanced Graduate Leadership Program** (AGLP) Fellowship, Yale Graduate School of Arts and Sciences — 2016 - Present

◇ **Invited to the White House** as an Iranian elite in the United States — April 2016

◇ **CRA-Women Graduate Cohort Workshop** Fellowship — April 2015

◇ **Yale University Ph.D. Fellowship** Award — 2014 - Present

◇ **Iranian National Elites Foundation** grant, awarded to the top 0.03 % of engineering students nationally — 2010 - 2014

◇ **Ranked 74th** in Iran's university entrance exam among over 400,000 participants — June 2010

◇ National Organization for Development of Exceptional Talents **(NODET)** member — 2004 - 2010

Work Experience

◇ **Google DeepMind Technologies**, Montreal, QC, Canada — Fall 2018
Research Intern, supervised by Professor Doina Precup
Project: A neuroscience-motivated approach to attention mechanism in reinforcement learning (RL)

◇ **Summary Analytics Inc.**, Seattle, WA — Summer 2018 - Present
Research Scientist (part-time), supervised by Professor Jeff Bilmes

◇ **Optical Networks Research Laboratory** (ONRL), Tehran, Iran — Summer 2013
Research Intern, supervised by Professor Jawad Salehi
Project: Analysis of Underwater Optical CDMA Communication

◇ **Nokhbegan High School**, Tehran, Iran — 2011 - 2013
Instructor of Graph Theory

Publications

- Mehraveh Salehi, Abigail S. Greene, Amin Karbasi, Xilin Shen, Dustin Scheinost, and R. Todd Constable. **"There is no single functional atlas even for a single individual: Parcellation of the human brain is state dependent."** bioRxiv (2018): 431833. (In revision)
- Mehraveh Salehi, Amin Karbasi, Xilin Shen, Dustin Scheinost, and R. Todd Constable. **"State-specific individualized functional networks form a predictive signature of brain state."** bioRxiv (2018): 372110. (In revision) (Received the Best Poster Award at Yale BioImaging Sciences Retreat)
- Daniel S. Barron, Mehraveh Salehi, Michael Browning, Catherine J. Harmer, R. Todd Constable, and Eugene Duff. **"Exploring the prediction of emotional valence and pharmacologic effect across fMRI studies of antidepressants."** NeuroImage: Clinical 20 (2018): 407-414.
- Mehraveh Salehi, Amin Karbasi, Dustin Scheinost, and R. Todd Constable. **"A submodular approach to create individualized parcellations of the human brain."** In International Conference on Medical Image Computing and Computer-Assisted Intervention, pp. 478-485. Springer, Cham, 2017. (Received the Best Paper Award and the Travel Award; Featured in Yale News)
- Mehraveh Salehi, Amin Karbasi, Xilin Shen, Dustin Scheinost, and R. Todd Constable. **"An exemplar-based approach to individualized parcellation reveals the need for sex specific functional networks."** NeuroImage (2017).
- Mehraveh Salehi, Dustin Scheinost, Monica D. Rosenberg, Emily S. Finn, Marvin M. Chun, and R. Todd Constable. **"Network connectivity changes between task and resting-state fMRI data reveal flexibility and generalize attention prediction."** (In revision)
- Mohammad J. Salehi, Mehraveh Salehi, Hamidreza Bagheri, Babak H. Khalaj, Marcos Katz and Pavel Loskot,**"Exploiting Relative Consensus Techniques in Future Advanced Communication Networks in the Presence of Failures,"** International Conference on Electrical Engineering and Applications, 4-6 April 2014, Athens, Greece.

Invited Talks

- Invited talk at **Magnetic Resonance Research Center** (MRRC) — January 2019
  Yale University, New Haven, CT
- Invited presentation at **Montreal Artificial Intelligence and Neuroscience Conference** (MAIN) — December 2018
  Montreal, QC, Canada
- Invited talk at **University of Montreal** (UdeM) — November 2018
  Montreal, QC, Canada
- Invited talk at **Yale Institute for Network Science** (YINS) — June 2018
  Yale University, New Haven, CT
- Invited talk at **Google NYC Research Seminars** (Google AI) — December 2017
  New York City, NY
- Invited judge at **Yale Hackathon** (YHack) — December 2017
  Yale University, New Haven, CT

Contributed Workshop Presentations

- Presented poster at Montreal Artificial Intelligence and Neuroscience (MAIN) — December 2018
  Montreal, QC, Canada
- Presented poster at Yale BioImaging Sciences Retreat — March 2018
  Southbury, CT
  (Received the Best Poster Award)
- Presented poster at Biennial Brain Function Workshop — March 2018
  Whistler, BC, Canada

Contributed Workshop Presentations

◇ Presented poster at International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) — September 2017
Quebec City, QC, Canada
(Received the Travel Award)

◇ Presented poster at Society for Neuroscience (SFN) Annual Meeting — November 2016
San Diego, CA

Teaching and Mentoring Experience

◇ **Yale University (Teaching Assistant)**
Dynamic & Discrete Optimization (Spring 2018), Medical Software Design (Spring 2017), Engineering Innovation and Design (Fall 2016), Stochastic Processes (Spring 2016)

◇ **Sharif University of Technology (Teaching Assistant)**
Digital Signal Processing (Spring 2014), Electrical Engineering Principles (Fall 2013), Communication Systems (Fall 2013), Introduction to Probability (Spring 2013), Computer Architectures (Fall 2012)

◇ **Women in Science at Yale (WISAY)** — August 2015 - Present
Providing mentorship to undergraduates interested in STEM majors.

Coursework

◇ **Yale University (Engineering and Applied Science)**
Optimization Techniques (Fall 2017), Probabilistic Graphical Models (Fall 2016), Data Mining and Machine Learning (Spring 2016), Network Algorithms and Stochastic Optimization (Spring 2015), Stochastic Processes (Fall 2015)

◇ **Yale University (MBA Program)**
Interpersonal dynamics (Fall 2017), Creativity and Innovation (Spring 2017), Entrepreneurship and New Ventures (Fall 2016)

◇ **Sharif University of Technology**
Data Transmission and Networking (Spring 2014), Signals and Systems (Fall 2013), Digital Signal Processing (Fall 2013), Digital Communication (Spring 2013), Advanced Programming (Spring 2013), Probability and Statistics (Spring 2012), Advanced Engineering Mathematics (Fall 2011)

Leadership and Professional Activities

◇ **Advanced Graduate Leadership Program** Fellow (AGLP) — July 2016 - Present
Provided with educational opportunities to hone skills in teaching, research, and outreach. Provided with business opportunities including taking four-semester course sequence offered by Yale School of Management.

◇ **Served as a Reviewer** for journals and conferences across disciplines:

- **Neuroscience:** NeuroImage, Organization for Human Brain Mapping (OHBM), Brain Structure and Function (BS&F), IEEE Transactions on Biomedical Engineering, Journal of Neuroscience Methods
- **Machine Learning:** Association for the Advancement of Artificial Intelligence (AAAI), Knowledge Discovery and Data Mining (KDD), The Web Conference (WWW)

◇ **Sharif Conference on Future Electronics (SCFE)** — Spring 2012
Chair of Advertising Committee

Skills

◇ **Programming:** C/C++, Python, R, MATLAB, Tcl/Tk, Java, Android, Verilog HDL

◇ **CADs and Platforms:** AVR, GNU/Linux, QuartusII, OrCad PSpice, Gephi, HTML

◇ **Languages:** Persian (native), English (fluent), Turkish (fluent), Arabic (basic)

References

◇ Available upon request.