Ehsan Hajiramezanali

AI at Respiratory and Immunology
AstraZeneca
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Status: **US permanent resident**

EDUCATION

Texas A&M University — College Station, TX
Ph.D. Candidate in Electrical Engineering — Aug. 2015 - Dec. 2020

Amirkabir University of Technology — Tehran, Iran
M.Sc. in Electrical Engineering — Sep. 2009 - Feb. 2012

K. N. Toosi University of Technology — Tehran, Iran
B.Sc. in Electrical Engineering — Sep. 2005 - Aug. 2009

TECHNICAL SKILLS

Programming Languages: Most experienced with Python, R, MATLAB, Bash, AWK. || **Database:** SQL.
Tools & Softwares: PyTorch, PyTorch Lightning, WandB, TensorFlow, SciKit, NetworkX, Git, Unix, Matplotlib, Pandas, MPI, OpenMP, Kubeflow.
ML/STAT Methods:

- Bayesian Machine Learning
- (Bayesian) Graph Machine Learning
- Audio Processing
- Gene Expression Analysis
- Autoregressive Models
- Bayesian nonparametric
- Deep Learning
- (Graph) Contrastive Learning
- Relational Inference
- Multi-omics Data Integration
- Transfer Learning
- Generative Models
- Multi-modal Learning
- Transfer Learning
- Drug Repurposing
- Neural Processes

PROFESSIONAL EXPERIENCE

- **AI Research Scientist / Data Scientist, AstraZeneca**, Jan. 2021 - Present.
  - Developing an audio processing pipeline to be used in clinical trials.
  - Researching on multi-modal learning, graph neural network, and representation learning for patient understanding.
- **Graduate Research Assistant, Texas A&M University**, Aug. 2015 - Dec. 2020.
  - Did research on graph analytics and machine learning problems including graph representation learning, graph neural networks, deep learning, and Bayesian inference.
  - Researched on Bayesian machine learning and its applications in life sciences including gene expression analysis, temporal analysis of count data, multi-omics data integration, transfer learning, multi-domain learning for cancer subtype discovery, relational inference, optimal Bayesian classification of single-cell trajectories, and drug repositioning.
- **Graduate Research Assistant, Amirkabir University of Technology**, Aug. 2009 - July 2015
  - Worked on statistical signal processing and its applications including detection and estimation, stochastic differential equations, wavelet transformation, and hidden Markov models.

SELECTED PUBLICATIONS (Google Scholar Profile)

$\star$ = equal contribution with the first author

Published/Accepted (chronological)

[C9] A. Hasanzadeh, **E. Hajiramezanali**, N. Duffield, and X. Qian, "MoReL: Multi-omics Relational Learning", ***International Conference on Learning Representations (ICLR 2022)***.

[C8] T. Ucar, **E. Hajiramezanali**, and L. Edwards, "SubTab: Subsetting Features of Tabular Data for Self-Supervised Representation Learning ", ***Neural Information Processing Systems (NeurIPS 2021)***.

[C7] **E. Hajiramezanali**, A. Hasanzadeh, N. Duffield, K. Narayanan, and X. Qian, "BayReL: Bayesian Relational Learning for Multi-omics Data Integration", ***Neural Information Processing Systems (NeurIPS 2020)***.

[C6] A. Hasanzadeh*, **E. Hajiramezanali***, S. Boluki, M. Zhou, N. Duffield, K. Narayanan, and X. Qian, "Bayesian Graph Neural Networks with Adaptive Connection Sampling", ***International Conference on Machine Learning (ICML 2020)***.

[C5] **E. Hajiramezanali**, A. Hasanzadeh, N. Duffield, K. Narayanan, M. Zhou, and X. Qian, "Semi-Implicit Stochastic Recurrent Neural Networks", **IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2020)**, Barcelona, Spain, May 2020. (*Oral Presentation*).

[C4] **E. Hajiramezanali**, A. Hasanzadeh, N. Duffield, K. Narayanan, M. Zhou, and X. Qian, "Variational Graph Recurrent Neural Networks", ***Neural Information Processing Systems (NeurIPS 2019)***, Vancouver, Canada, Dec. 2019.

[C3] A. Hasanzadeh*, **E. Hajiramezanali***, N. Duffield, K. Narayanan, M. Zhou, and X. Qian, "Semi-Implicit Graph Variational Auto-Encoders", ***Neural Information Processing Systems (NeurIPS 2019)***, Vancouver, Canada, Dec. 2019.

[J2] **E. Hajiramezanali**, M. Imani, U. Braga-Neto, X. Qian, and E. Dougherty, "Scalable Optimal Bayesian Classification of Single-Cell Trajectories under Regulatory Model Uncertainty", ***BMC Genomics***, Volume 20, Number 6, June 2019.

[C2] **E. Hajiramezanali**, S. Z. Dadaneh, A. Karbalayghareh, M. Zhou, and X. Qian, "Bayesian Multi-Domain Learning for Cancer Subtype Discovery from Next-Generation Sequencing Count Data", ***Neural Information Processing Systems (NeurIPS 2018)***, Montreal, Canada, Dec. 2018.

[C1]] **E. Hajiramezanali**, K. He, P. Figueiredo, S. Sze, X. Qian, "Impact of RNA-seq Read Alignment on Differential Alternative Splicing Detection," *14th Annual MidSouth Conference on Computational Biology and Bioinformatics* ***MCBIOS 2017***, AR, USA, March 2017.

[J1] S. H. Fouladi, **E. Hajiramezanali**, H. Amindavar, J. A. Ritcey, and P. Arabshahi, "Denoising Based on Multivariate Stochastic Volatility Modeling of Multiwavelet Coefficients," ***IEEE Transactions on Signal Processing***, Volume 61, Number 22, November 2013.

Under Review

- A. Hasanzadeh, M. Armandpour, **E. Hajiramezanali**, M. Zhou, N. Duffield, and K. Narayanan, "Bayesian Graph Contrastive Learning," ***CVPR***, 2022.
- **E. Hajiramezanali**, T. Ucar, and L. Edwards, "Bayesian Relational Model for Scalable Multi-modal Learning," ***ICLR***, 2022.
- **E. Hajiramezanali**, S. Z. Dadaneh, P. Figueiredo, S. Sze, M. Zhou, and X. Qian, "Differential Expression Analysis of Dynamical Sequencing Count Data with a Gamma Markov Chain," ***Bioinformatics***, 2021.
- S. Niyakan, **E. Hajiramezanali**, S. Boluki, S. Z. Dadaneh, and X. Qian, "SimCD: Simultaneous Clustering and Differential expression analysis for single-cell transcriptomic data," ***Bioinformatics***, 2021.
- S. Afroogh, A. Esmalian, A. Mostafavi, A. Akbari, K. Rasoulkhani, S. Esmaeili, and **E. Hajiramezanali**, "Tracing app technology: An ethical review in the COVID-19 era and directions for post-COVID-19," ***Ethics and Information Technology***, 2021.

ACADEMIC HONORS

- Recipient of the **Best Reviewer Award**, ICML. [2021]
- Recipient of **Travel Grant Awards** from Department of Electrical Engineering, Texas A&M University. [2020]
- Recipient of the **Chevron Scholarship**, Texas A&M University. [2020]
- Finalist nominee for the **Best Student Paper Award**, 45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP). [2020]
- Recipient of **US Residency under the Category of National Interest**. [2020]
- Finalist nominee for the **2020 Google AI Fellowship**, Texas A&M University. [2020]
- Finalist nominee for the **Outstanding Engineering Awards**, College of Engineering, Texas A&M University. [2019]
- Recipient of the **Outstanding Graduate Student Award**, Department of Electrical and Computer Engineering, Texas A&M University. [2019]
- Top 50% **highest-scoring reviewers**, NeurIPS. [2019]
- Recipient of the **Travel Grant Award** from Scientific Computing meets Machine Learning and Life Sciences. [2019]
- Recipient of the **NSF Travel Grant Award** from International Workshop on Computational Network Biology: Modeling, Analysis, and Control. [2018]
- Recipient of the **Travel Grant Award** from the 14th Annual MCBIOS Conference. [2017]
- **Ranked 71st** among nearly 40,000 participants in the Nation Wide Universities Entrance Exam for MSc. Degree among All Branches of Electrical Engineering, Iran. [2009]

PROFESSIONAL ACTIVITIES

Reviewer

- **Conferences:** BHI 2017, NeurIPS 2019, AAAI 2019, EMBC 2019, NeurIPS 2020, ICML 2020, AAAI 2020, IEEE BigData 2020, ICLR 2021, ICML 2021, NeurIPS 2021, ICLR 2022, ICML 2022
- **Journals:** IET Control, Theory & Applications, IET Radar, Sonar & Navigation, IEEE/ACM Transactions on Computational Biology and Bioinformatics, IEEE Intelligent Systems, PLOS ONE, IEEE Transactions on Signal Processing

Open source contributions

- VGRNN, SIG-VAE, GDC, GMNB, BayReL: [GitHub Repositories]