# Ehsan Hajiramezanali

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# PROFESSIONAL EXPERIENCE

- AI Research Scientist, AstraZeneca, Jan. 2021 Present.
  - Researching on multi-modal learning, graph neural network, and representation learning for patient understanding.
  - Developing an audio processing pipeline to be used in clinical trials.
  - Supporting to build an ML Research Platform on top of Kubernetes for DS&AI.
- 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.

# **EDUCATION**

Texas A&M University Ph.D. in Electrical Engineering

Amirkabir University of Technology M.Sc. in Electrical Engineering

K. N. Toosi University of Technology B.Sc. in Electrical Engineering

College Station, TX Aug. 2015 - Dec. 2020

Tehran, Iran Sep. 2009 - Feb. 2012

Tehran, Iran Sep. 2005 - Aug. 2009

## **TECHNICAL SKILLS**

Programming Languages: Most experienced with Python, R, MATLAB, Bash, AWK.

Tools & Softwares: PyTorch, PyTorch Lightning, Weights&Biases, TensorFlow, Git, Unix, Matplotlib, Pandas, MPI, Kubeflow, AWS, HPRC, Vim, VS Code.

- ML/STAT Methods:
  - Bayesian Machine Learning
  - (Bayesian) Graph Machine Learning
  - Audio Processing
  - Gene Expression Analysis • Autoregressive Models
- Relational Inference
  - Multi-omics Data Integration
  - Neural Processes

- Generative Models
- Multi-modal Learning
- Transfer Learning
- Drug Repurposing
- Bayesian nonparametric

### 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<sup>\*</sup>, E. Hajiramezanali<sup>\*</sup>, 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).

- Deep Learning • (Graph) Contrastive Learning

- [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<sup>\*</sup>, E. Hajiramezanali<sup>\*</sup>, 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," *ICML*, 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.

## HONORS

- Recipient of the **Best Reviewer Award**, ICML. [2021]
- 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]
- 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: PLOS ONE, IEEE/ACM Transactions on Computational Biology and Bioinformatics, Scientific Reports, IEEE Transactions on Signal Processing, IET Control, Theory & Applications