Mahdi Ghaznavi

✉ *mahdi.ghaznavi@ce.sharif.edu*

Education

Sep 2022 –Jan 2025
M.Sc., *Sharif University of Technology*, Tehran, Iran, *AI & Robotics*.
Thesis Title: Robust Learning to Spurious Correlation without Access to Side Information of the Environment (Under Supervision of Dr. Rohban & Dr. Soleymani Baghshah)

Feb 2020 –Sep 2022
B.Sc., *Sharif University of Technology*, Tehran, Iran, *Mathematics and Applications-Pure Mathematics*.

Sep 2017 –Sep 2022
B.Sc., *Sharif University of Technology, Tehran, Iran*, *Computer Engineering*.
Thesis Title: Domain Adaptation in Digital Mammography Image Processing (Under Supervision of Prof. H. Rabiee, Prof. H. Asadi, R. Ghavami)

Work Experience

Jun 2024 –Jul 2024
Deep Learning Engineer, *Prepaire Labs*.
I have been responsible for researching methods to construct digital twins from various user modalities, such as genetic reports and blood tests, with the aim of proposing solutions for their healthcare goals. Despite performance challenges, I have focused on methods that are effective without necessitating the storage of users' healthcare data, thereby maintaining privacy. Flowise and Langchain have served as the frameworks for this development.

Jul 2022 –Sep 2022
Research Assistant, *Aalto University*, Espoo, Finland.
I was a research assistant under the supervision of Dr. Vikas Garg. I was working on interpretable molecular optimization via disentangling the latent space of molecule graph generative models.

Jul 2021 –May 2022
ML Engineer & Researcher, *AI-Med*, Tehran, Iran.
I worked on developing a machine-learning-based system for diagnosing breast cancer and segmenting potential tumors in mammography images in early stages. The model which I contributed to its development is now used to assist some of the best radiologists in the Middle East. We used Pytorch as the basis of our framework.

Sep 2018 –Oct 2020
AI Researcher & Developer, *Shenakht Pajouh*, Tehran, Iran.
I have been involved in implementing various NLP tasks for the paragraph generation task of our mental health assistant agent by Tensorflow and Keras. I was also responsible for several study projects such as *perception in neuroscience* and *hardware requirements of modern AI paradigms*.

Publications and Research Reports

- **Trained Models Tell Us How to Make Them Robust to Spurious Correlation without Group Annotation.** Arxiv Preprint.
- **GABInsight: Exploring Gender-Activity Binding Bias in Vision-Language Models**. ECAI 2024.
- **Data-Driven Annotation-Free Group Robustness Across Extremely Unbalanced Group Sizes.** OOD-CV Workshop at ICCV 2023. *Arxiv*:Annotation-Free Group Robustness via Loss-Based Resampling

Honors and Awards

Oct 2021	**Gold Medal (First Place)**, *Iran's Computer Engineering Olympiad*.
	It is held by the national organization of educational testing, among top computer science and engineering students that introduced by all universities in the country.
Sep 2016	**Bronze medal**, *National Olympiad in Informatics*.
	It is the national stage of IOI among the top 40 students who have been accepted in its past three stages of exams, and medalists join Iran's National Elites Foundation.

Advanced Cources

AI/ML	Security and Privacy in ML, Large Language Models, Modern Information Retrieval, Convex Optimization, ML Theory, Reinfrocement Learning, NeuroAI (Neuromatch)
Statistics	Bayesian Methods in Statistics and Learning (topics in statistics), Information Theory, Stochastic Process
Computer Science	Probabilistic Methods in Combinatorics, Complexity Theory Seminar, Algorithmic Game Theory, Combinatorial Optimization
Bio/Medicine	Bioinformatics, Computational Drug Design
Mathematics	Galois Theory, Algebraic Topology

Programming Skills

Languages and Tools	Python (Pytorch, Tensorflow, Keras, Gym, Transformers), C/C++, Java, R, MATLAB, Git.

Volunteer Experience

Dec 2024	**AI and Human Agency Social at NeurIPS 2024**, *Organizer*.
	I am the head of a team of researchers for organizing a social in "AI and Human Agency" in the upcoming NeurIPS 2024. In this social event, we will engage in a discourse on the impact of autonomous AI on human agency across social, economic, and political dimensions, and explore solutions to potential challenges.
Nov 2020 –Present	**Shenasa (Sharif Cognitive Science Community)**, *Member of Central Council*.
	I am a member of the central council in Shenasa, Sharif cognitive science student community for organizing events and research of cognitive science at Sharif University. We organize events in various fields related to cognitive science, mainly in **neuroscience** and **computer science (especially AI)**, but also in philosophy (especially philosophy of mind), psychology, social science, etc. We organized a multidisciplinary webinar, Brain & Mind 2021, which focuses on understanding *attention* from different perspectives. We had some great lectures from Prof. M. Posner, Prof. Watzl, Dr. N. Nategh, etc.

Teaching Assistant

Spring 2024	**Modern Information Retrieval**, *Undergraduate*, Dr. Soleymani Baghshah, Head TA.
Spring 2024	**Reinforcement Learning**, *Graduate*, Dr. Rohban.
Spring 2023	**Security & Privacy in ML**, *Graduate*, Dr. Sadeghzadeh, Head TA.
Spring 2023	**Modern Information Retrieval**, *Undergraduate*, Dr. Soleymani Baghshah, Head TA.
Fall 2022	**Deep Learning**, *Graduate*, Dr. Fatemizadeh.
Spring 2022	**Game Theory**, *B.Sc./M.Sc*, Dr. Alishahi.
Spring 2022	**Machine Learning**, *Graduate*, Dr. Peyvandi.
Fall 2021	**Design of Algorithms**, *Undergraduate*, Dr. Zarrabi-Zadeh.

Spring 2021 **Linear Algebra**, *Undergraduate*, Dr. Motahari.

Fall 2020 **Information Theory & Coding**, *Graduate*, Dr. Jafari-Siavoshani.

Fall 2020 **Introduction to Bioinformatics**, *Undergraduate*, Dr. Sharifi-Zarchi & Dr. Koohi.

Fall 2019 **Engineering Probability & Statistics**, *Undergraduate*, Dr. Sharifi-Zarchi.