# Alireza Ghafouri

✉ alirezaghafouri77@gmail.com   in alirezaghafouri
🌐 alireza-ghafouri.github.io   ⌗ Alireza-Ghafouri

## Education

**M.Sc. in Computer Engineering - Artificial Intelligence**    *University of Tehran*
*Master's degree program*    *Sep 2021 – Sep 2024*
*Thesis: Semi-Supervised representation learning using deep generative models*
*Supervisors: Dr. Reshad Hosseini , Dr. Mostafa Tavassolipour*
*Final Grade: 19.30/20 (4/4),* **Ranked 2nd**

**B.Sc. in Computer Engineering**    *University of Kashan*
*Bachelor's degree program*    *Sep 2017 – Sep 2021*
*Final grade: 18.33/20 (3.7/4),* **Ranked 2nd**

## Research Interests

❯ **Generative AI**    ❯ **Trustworthy AI**    ❯ **Multimodal Learning**    ❯ **Representation Learning**

## Research/Work Experience

**Computational Audio-Vision Lab** 🔗    *Jul 2023 – Present*
*Advisers: Dr. Reshad Hosseini , Dr. Mostafa Tavassolipour*    *University of Tehran*

- Designed and implemented a VAE-regularized extension of FixMatch to improve robustness and stability in semi-supervised image classification under noisy and limited-label conditions.
- Developed and evaluated new loss formulations combining generative priors and representation-similarity constraints, demonstrating improved resilience to noise attacks and distribution shift.
- Led the full research pipeline—from hypothesis design to experimentation and analysis.

**Neural marketing using eye movements Prediction** 🔗    *Jan 2023 – Jun 2023*
*Research Adviser: Dr. Ramin Toosi*    *Avir Artificial Intelligence Center*

- Implemented and benchmarked video saliency prediction models using proprietary eye-tracking datasets.
- Analyzed eye-movement data to model cognitive mechanisms underlying customer purchase decisions.

## Publications

**VAE-FixMatch: Towards Robust Representation Learning in Semi-Supervised Settings**    *in final preparation for submission*
*Alireza Ghafouri, Reshad Hosseini, Mostafa Tavassolipour*    *University of Tehran*

## Honors & Awards

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|---|---|---|
| **NMA Admission** | Selected as TA and Lead TA at Neuromatch Academy | *2023-2025* |
| **Ranked 2nd** | M.Sc. in Artificial Intelligence cohort, University of Tehran | *2024* |
| **Ranked 19th** | National Master's Entrance Exam (Among +13,000 Participants) | *2021* |
| **Ranked 10th** | National Student Scientific Olympiad | *2021* |
| **Ranked 2nd** | B.Sc. in Computer Engineering cohort, University of Kashan | *2021* |
| **Distinguished Student** | Awarded by University Exceptional Talents Committee | *2020* |

## Teaching Experience

**Analysis and Design of Deep Neural Networks (TA)**    *Fall 2025*
*Dr. Babak N Araabi, Dr. Ahmad Kalhor*    *University of Tehran*

**Deep Learning (Lead TA)** 🎖    *Summer 2025*
*Global collaboration*    *Neuromatch Academy*

**Trustworthy AI (TA + Guest Instructor)**    *Spring 2024*
*Dr. Mostafa Tavassolipour*    *University of Tehran*

**Natural Language Processing (TA)**    *Spring 2024*
*Dr. Javad Salimi Sartakhti*    *University of Kashan*

**Deep Generative Models (TA)** — *Fall 2023*
*Dr. Mostafa Tavassolipour, Dr. MohammadAmin Sadeghi* — *University of Tehran*

**Computational Neuroscience (TA & Lead TA)** — *Summer 2023,2024*
*Global collaboration* — *Neuromatch Academy*

**Statistical Inference (TA)** — *Fall 2023*
*Dr. Mohammadreza Abolghasemi* — *University of Tehran*

**Deep Learning and Applications (TA)** — *Spring 2023*
*Dr. Reshad Hosseini* — *University of Tehran*

**Artificial Intelligence (Head TA)** — *Spring 2022*
*Dr. Hossein Ebrahimpour* — *University of Kashan*

**Machine Learning (TA)** — *Spring 2022, 2023*
*Dr. Mohammadreza Abolghasemi, Dr. Mostafa Tavassolipour* — *University of Tehran*

## Course Projects

**Deep Learning and Applications** — *Spring 2022*
*Dr. Reshad Hosseini* — *University of Tehran*
- Deep fully connected neural network implementation (from scratch using numpy)
- Saliency map prediction using deep neural networks
- Implementation of a deep fully connected network for inverting visual representations of a CNN
- Brain tumor image segmentation Using U-net architecture
- Part of speech tagging for Persian Language using deep recurrent model

**Natural Language Processing** — *Spring 2022*
*Dr. Heshaam Faili, Dr. Yadollah Yaghoobzadeh* — *University of Tehran*
- Applying Naive Bayes classification for Spam and Truth detection.
- Conducting POS tagging and Named Entity Recognition (NER) tasks on the Penn Treebank dataset.
- Executed multilingual classification and Persian NLI tasks with BERT-based models.
- Performing question-answering task on a Persian dataset using a BERT-based model.

**Data Analysis** — *Fall 2021*
*Dr. MohammadAmin Sadeghi* — *University of Tehran*
- Modeled COVID-19 infection trends using statistical inference techniques and public datasets.
- Scraping Alibaba and MrBilit tickets and analysing the prices
- Web crawling and data cleaning: Obtaining Laptop Listings from Digikala

**Social Networks** — *Fall 2022*
*Dr. Masoud Asadpour* — *University of Tehran*
- Persian Users' Graph of Tweets Network Analysis in Iran's 2022 Protests

## Selected Courses

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|---|---|---|---|
| • **Machine learning** | 20/20 (4/4) | • **Data Analysis** | 19/20 (4/4) |
| • **Deep Learning and Applications** | 19.25/20 (4/4) | • **Statistical Inference** | 18/20 (4/4) |
| • **Natural Language Processing** | 18.40/20 (4/4) | • **Reinforcement Learning** | 20/20 (4/4) |
| • **Artificial Intelligence** | 19.50/20 (4/4) | • **Computational Intelligence** | 20/20 (4/4) |

## Skills

| **Programming Languages** | Python (Pytorch, Tensorflow, Pandas, NumPy, Scikit-Learn, Matplotlib, NLTK, etc.), R, SQL |
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| | Persian (Native), English (C1 - TOEFL IBT Overall best Score: 106 (Reading: 27, Listening: 26, Speaking: 25, Writing: 28) |

## References

**Dr. Reshad Hosseini**
 University of Tehran
 reshad.hosseini@ut.ac.ir

**Dr. Mostafa Tavassolipour**
 University of Tehran
 tavassolipour@ut.ac.ir

**Dr. Javad Salimi Sartakhti**
 University of Kashan
 salimi@kashanu.ac.ir