

# Hamidreza Amirzadeh

CE M.Sc. STUDENT , SHARIF UNIVERSITY OF TECHNOLOGY, TEHRAN

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## Education

### Sharif University of Technology

Tehran, Iran

M.Sc. in Artificial Intelligence, Computer Engineering

Sept 2022 - Present

- GPA: 18.31/20
- Thesis Title: Transformers interpretability on natural language tasks
- Advisor: Hossein Sameti
- Courses: Machine Learning, Large Language Models, Deep Learning, Convex Optimization, Security and Privacy in Machine Learning, Natural Language Processing, Digital Signal Processing

### Tehran Polytechnic (Amirkabir University of Technology)

Tehran, Iran

B.Sc. in Mechanical Engineering

Sept 2017 - Sept 2021

- GPA: 16.37/20
- Thesis Title: Gait phase detection using machine learning algorithms
- Advisor: Mohammad Zareinejad
- Courses: Numerical Calculations, Signals and Systems, Linear Control systems

### National Organization for Development of Exceptional Talents

Kerman, Iran

Diploma in Mathematics and Physics Discipline

Sept 2014 - Jun 2017

- GPA: 19.34/20

## Research Interests

- Trustworthy AI
- Models Interpretability
- Natural Language Processing
- Deep Learning

## Publications

### Imaginations of WALL-E : Reconstructing Experiences with an Imagination-Inspired Module for Advanced AI Systems [paper]

arXiv

Zeinab Sadat Taghavi, Soroush Gooran, Seyed Arshan Dalili, **Hamidreza Amirzadeh**, Mohammad Jalal Nematbakhsh, Hossein Sameti

- Seeking to submit in TACL 2024

## Research Experience

### Graduate Research Assistant at Sharif University of technology

Tehran, Iran

Under Supervision of Prof. Hossein Sameti

Sept 2022 - Present

- Working on interpretability of transformer based language models and specifically quantifying token attribution in Transformers.
- Proposed an imagination inspired module to enhance the performance of multi-modal LLMs on text only tasks.
- Participated in a shared task of SemEval 2024 titled SHROOM, a Shared-task on Hallucinations and Related Observable Overgeneration Mistakes.

### NLP Research Intern at ASR GOOYESH PARDAZ

Tehran, Iran

Under Supervision of Prof. Hossein Sameti

Summer 2023

- Development of a novel Persian knowledge graph.

### Undergraduate Research Assistant at Tehran Polytechnic

Tehran, Iran

Under Supervision of Prof. Mohammad Zareinejad

Spring 2022

- Gait event detection using inertial sensors and machine learning algorithms. [code]

## Honors & Awards

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|------|---|------|
| 2024 | <b>Participating as a reviewer</b> , in the peer review process for SemEval 2024  | Iran |
| 2023 | <b>Second place in Rahisho competition</b> , a problem-oriented event held by Iran's National Elites Foundation                                 | Iran |
| 2023 | <b>Participating as a reviewer</b> , in the peer review process for International Conference of Mechatronics and Robotics (ICRoM) [certificate] | Iran |
| 2022 | <b>Ranked in top of 0.05%</b> , in the National Entrance Exam for M.Sc. in Computer Engineering   | Iran |
| 2017 | <b>Ranked in top of 0.4%</b> , in the National Entrance Exam for B.Sc. of Iran among more than 148,000 students                                 | Iran |

# Teaching Experience

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## Teaching Assistant

Sharif University of technology

Tehran, Iran

Sept 2022 - Present

- **Artificial Intelligence**, Prof. Mohammad H. Rohban, Spring 2023, Spring 2024
- **Deep Learning**, Prof. Hamid Beigy, Fall 2023
- **Artificial Intelligence**, Prof. Mahdieh Soleymani, Prof. Mohammad H. Rohban, Fall 2023
- **Convex Optimization**, Prof. Amir Najafi, Spring 2024
- **Deep Learning**, Prof. Mahdieh Soleymani, Spring 2024
- **Security and Privacy in Machine Learning**, Prof. Amir M. Sadeghzadeh, Spring 2024
- **Deep Generative Models**, Prof. Hamid Beigy, Spring 2024
- **Natural Language Processing**, Prof. Ehsaneddin Asgari, Spring 2024

## Skills

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**Programming** Python (PyTorch, sklearn, NumPy, Pandas, Tensorflow), C/C++, MATLAB, R, SQL.  
**Tools and Frameworks** PyTorch, Keras, Tensorflow, HuggingFace, Transformers, Git, HTML/CSS, Latex.  
**Languages** Persian (Native), English (Fluent).

## Projects

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### Adversarial Persian QA

Fall 2022

Robustness Investigation of Persian Transformer-based Retrieval Question Answering models against some common adversarial attacks

- Part of our final project in the NLP course @ SUT

### Large Language Models course assignments @ Sharif University of Technology

Fall 2023

Including PEFT methods, In-context Learning, VLMs, RLHF, DPO (PyTorch)

- Taught by Prof. Mahdieh Soleymani, Prof. Mohammad H. Rohban and Prof. Ehsaneddin Asgari

### Natural Language Processing course assignments @ Sharif University of Technology

Fall 2022

Including Tokenization, Statistical methods, Transformers, Text classification, Text generation (PyTorch)

- Taught by Prof. Ehsaneddin Asgari

### Security and Privacy in Machine Learning course assignments @ Sharif University of Technology

Spring 2023

Including Adversarial attack methods, Defensive approaches, Data poisoning, Differential privacy (PyTorch)

- Taught by Prof. Amir M. Sadeghzadeh

### Deep Learning course assignments @ Sharif University of Technology

Fall 2022

Including CNN, RNN, Attention mechanism, Deep generative models, Reinforcement learning (PyTorch)

- Taught by Prof. Hamid Beigy

## References

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- **Hossein Sameti**, sameti@sharif.edu, Sharif University of Technology
- **Mohammad Zareinejad**, mzare@aut.ac.ir, Tehran Polytechnic (Amirkabir University of Technology)