

# Amirali Molaei

Email: [mailto:Amirali\\_molaei@comp.iust.ac.ir](mailto:Amirali_molaei@comp.iust.ac.ir)

Google Scholar: [Amirali Molaei](#)

LinkedIn Account: [Amirali Molaei](#)

Website: <https://amiralimolaei.github.io>

Github: [AmiraliMolaei](#)

---

## EDUCATION

1. Oct. 2020 - present

### **Master : Computer Engineering – Artificial Intelligence & Robotics**

*School of Computer Engineering, Iran University of Science and Technology (IUST), Tehran, Iran*

- GPA: 4/4 (18.61/20)
- Supervisor: Prof. Mohammadreza Jahedmotlagh
- Thesis: Sarcasm Detection using transformer models via contrastive learning approach

2. Sep. 2015 - July 2019

### **Bachelor : Mechanical Engineering**

*Faculty of Mechanical Engineering, Islamic Azad University Tehran North Branch, Tehran, Iran*

- GPA: 16.09/20
- 

## RESEARCH INTERESTS

Interpretable Machine Learning, Explainable AI, Computer Vision, Medical Image Analysis, Natural Language Processing, Scene Recognition, Graphical Models

---

## PUBLICATIONS

- R. Azad, A. Kazerouni, M. Heidari, E. K. Aghdam, **A. Molaei**, Y. Jia, A. Jose, R. Roy and D. Merhof, "Advances in Medical Image Analysis with Vision Transformers: A Comprehensive Review," (Accepted for Publication in Medical Image Analysis Journal), [arxiv](#), [Github](#)
  - A. Aminimehr, P. Khani, **A. Molaei**, A. Kazemeini and C. Erik, "Tbexplain: A Text-Based Explanation Method for Scene Classification Models with the Statistical Prediction Correction," (Submitted to Expert Systems with Applications journal), [arxiv](#)
  - A. Aminimehr, **A. Molaei** and C. Erik, "EnTri: Ensemble learning with tri-level representations for explainable scene recognition," (Submitted to Pattern Recognition journal), [arxiv](#)
  - **A. Molaei**, A. Aminimehr, A. Tavakoli, A. Kazerouni, B. Azad, R. Azad, D. Merhof, "Implicit Neural Representation in Medical Imaging: A Comparative Survey," *Accepted at ICCV 2023 Workshop*, [arxiv](#), [github](#)
- 

## RESEARCH EXPERIENCES

### **RWTH Aachen University**, Aachen, Germany

Research Assistant (Under Supervision of [Dr. Dorit Merhof](#) and [Reza Azad](#))

- **Implicit Neural Representations in Medical Imaging:** Prepared a survey that examines the recent research progress in medical imaging that utilized implicit neural representations to handle various medical applications information. This survey has been recently accepted at the ICCVW 2023 workshop.
- **Vision Transformers in Medical Imaging:** Researched and studied the recent innovative use of vision transformers in addressing medical imaging tasks to contribute to a survey project. This effort resulted in its acceptance by the Medical Image Analysis journal.

### **Data Mining Lab**, IUST, Tehran, Iran

Research Assistant (Under Supervision of [Dr. Behrouz Minaei](#))

- **Argument Summarization with Transformers:** Implemented an algorithm based on transformer models for summarizing arguments, which includes extracting salient key point and matching these key points to each argument and predicting the most prevalent key point.

### **Complex Systems Lab**, IUST, Tehran, Iran

Research Assistant (Under Supervision of [Dr. M.R. Jahed-Motlagh](#))

- **Sarcasm Detection with Contrastive Learning and Transformers:** Currently working in the lab on classifying natural language sentences as either sarcastic or non-sarcastic. This classification is achieved using transformer models that employ a contrastive learning scheme for training.

**Project for Reinforcement Learning**, Tehran University, Tehran, Iran, Jan. 2022

- **Research Title:** Multi-Agent Opinion Formation via Reinforcement Learning
- **Methods:** Monte Carlo and Q-Learning
- **Description:** Agents learned how to reach consensus on an opinion by maximizing social cumulative reward in a Multi-Agent environment.

---

## TEACHING EXPERIENCES

- Teaching Assistant, IUST, Tehran, Iran** September & 2022 – January & 2023
- **Course:** Natural Language Processing
  - **Instructor:** Prof. Behrouz Minaei Bidgoli
  - **Responsibilities:**
    - Led a team of teaching assistants in providing assignments, exams, final exams, and projects
    - Instructed sequence to sequence models, Recurrent Neural Networks, and the principles of Transformer networks
    - Assigned leadership roles to other teaching assistants for handling and evaluating students' projects
- Teaching Assistant, IUST, Tehran, Iran** January & 2022 – July & 2022
- **Course:** Advanced Data Mining
  - **Instructor:** Prof. Behrouz Minaei Bidgoli
  - **Responsibilities:**
    - Instructed sequence to sequence models, Recurrent Neural Networks, and the principles of Transformer networks
    - Designed the assignments and the final exam
    - Managed and evaluated the final projects of students
- Teaching Assistant, IUST, Tehran, Iran** October & 2021 – January & 2022
- **Course:** Neural Networks
  - **Instructor:** Prof. Nasser Mozayani
  - **Responsibilities:**
    - Designed an assignment on Adaptive Resonance Theory and Hopfield networks
- Teaching Assistant, IUST, Tehran, Iran** October & 2021 – January & 2022
- **Course:** Natural Language Processing
  - **Instructor:** Prof. Behrouz Minaei Bidgoli
  - **Responsibilities:**
    - Designed an assignment on text classification and spell correction topic
    - Managed and evaluated the projects of a group of students

---

## TECHNICAL SKILLS

**Programming Languages:** Python, Java, Julia, Latex

**Frameworks:** PyTorch, Torch, Tensorflow, Scikit-learn, OpenCV, NPM (Numpy – Pandas - Matplotlib), Transformers, etc.

---

## CORE COURSES

Neural Networks, Pattern Recognition, Natural Language Processing, Machine Learning, Reinforcement Learning, Advanced Data Mining, Distributed Systems, Multi-Agent Systems

---

## REFERENCES

1. **Dr. Mohammadreza Jahed-Motlagh**, School of Compute Engineering, Iran University of Science and Technology, Tehran  
Phone: +98-912-104-5576  
[Jahedmr@iust.ac.ir](mailto:Jahedmr@iust.ac.ir)
2. **Dr. Behrouz Minaei Bidgoli**, School of Compute Engineering, Iran University of Science and Technology, Tehran  
Phone: +98-912-536-0306  
[b\\_minaei@iust.ac.ir](mailto:b_minaei@iust.ac.ir)
3. **Reza Azad**, Faculty of Electrical Engineering and Information Technology, RWTH Aachen University, Germany  
Phone: +491779244025  
[rezazad68@gmail.com](mailto:rezazad68@gmail.com)
4. **Dr. Nasser Mozayani**, School of Compute Engineering, Iran University of Science and Technology, Tehran  
Phone: +98-912-297-6682  
[Mozayani@iust.ac.ir](mailto:Mozayani@iust.ac.ir)