

# Mahdi Ghazavi

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## Education

### Iran University of Science and Technology

B.Sc. in Computer Engineering

Tehran, Iran

Sep. 2020 - Apr. 2025

- Among the Top 4 Universities in Iran based on QS Ranking
- CGPA of the Last Two Years: **3.87/4.0 (18.53/20.0** on Iranian Scale)
- Overall CGPA: **3.51/4.0 (16.81/20.0** on Iranian Scale)
- Final Project's Thesis: ReAct-Enhanced RAG Framework for Financial Document Question Answering, Under the Supervision of [Dr. Reza Entezari-Maleki](#)
- Selected Courses: Natural Language Processing: **20.0**, Deep Learning: **19.25**, Computer Vision: **18.1**, Signals and Systems: **19.0**, Trading Algorithms: **18.38**, Compiler Principles: **20.0**

### Harati High School

Diploma in Mathematics and Physics

Esfahan, Iran

Sep. 2017 - May 2020

- CGPA: **4.0/4.0 (19.75/20.0** on Iranian Scale)

## Research Interests

- Natural Language Processing (NLP)
- Machine Learning / Deep Learning
- NLP-based Financial Forecasting
- Data Mining
- Information Retrieval / RAG
- Large Language Models and Transformers

## Publications

### Market-Derived Financial Sentiment Analysis

Under Submission

Archive

Apr. 2025

Authors: H. Moradi-Kamali, MH. Rajabi-Ghozloou, **M. Ghazavi**, A. Soltani, R. Entezari-Maleki

- Description: Proposed market-derived labeling for Financial Sentiment Analysis, enhancing short-term trend prediction with context-aware prompt tuning and robust backtesting.

## Skills

- Programming Languages: Python (Advanced), C/C++ (Advanced), JS (Proficient), SQL (Proficient)
- Frameworks: React.js (Advanced), Next.js (Proficient)
- Libraries: Pytorch, Keras, TensorFlow, Scikit-Learn, Numpy, Pandas, NLTK, Scipy, Transformers (HuggingFace), Datasets (HuggingFace)
- Tools and Platforms: LaTeX, Git, Docker, Linux (Ubuntu & Kali)
- Interpersonal Skills: Teamwork, Teaching, Self-Learning, Problem Solving

## Research Experience

### ReAct-Enhanced RAG Framework for Financial Document Question Answering

IUST

Bachelor's Thesis, [School of Computer Engineering](#)

Sep. 2024 – Apr. 2025

- Supervisor: [Dr. Reza Entezari-Maleki](#).
- Developed a Retrieval-Augmented Generation (RAG) system for analyzing SEC filings using Large Language Models (LLMs).
- Implemented RAPTOR hierarchical indexing with recursive chunking for scalable retrieval and summarization.

- Integrated a LangGraph-based ReAct agent for iterative reasoning and multi-source answer synthesis.
- Improved query relevance via expansion and cross-encoder re-ranking.

### NLP-based Financial Forecasting: Market-Aware Textual Representation of Tweets

Undergraduate Internship, [School of Computer Engineering](#)

IUST

Feb. 2024 - July. 2024

- Supervisor: [Dr. Reza Entezari-Maleki](#).
- Developed a topic modeling method for dividing market-related tweets into meaningful topical groups using NLP and Transformers.
- Analyzed tweet representations for short-term market impact (P/L bounds) and applied temporal enrichment techniques to maintain model relevance.
- Implemented hyper-parameter optimized Triple Barriers for tweet labeling and optimized LSTM for next-day market prediction using engineered features.

## Teaching Experience

### Teaching Assistant

[School of Computer Engineering](#)

IUST

Sep 2023 - Present

- **Natural Language Processing** - Instructor: [Dr. Marzieh Davoodabadi Farahani](#) Spring 2025
- **Algorithmic Trading (Head TA)** - Instructor: [Dr. Reza Entezari Maleki](#) Spring 2025 & Fall 2024 & 2025
- **Computer Architecture** - Instructor: [Dr. Amir Mahdi Hosseini Monazzah](#) Spring 2024 & 2025
- **Computational Intelligence** - Instructor: [Dr. Nasser Mozayani](#) Fall 2024
- **Deep Learning** - Instructor: [Dr. Marzieh Davoodabadi Farahani](#) Fall 2024 & 2025
- **Fundamentals of Computer Programming** - Instructor: [Dr. Marzieh Malekimajd](#) Fall 2024
- **System Design and Analysis** - Instructor: [Dr. Mehrdad Ashtiani](#) Spring & Fall 2024
- **Algorithmic Trading** - Instructor: [Dr. Reza Entezari Maleki](#) Spring 2024
- **Compiler Design Principles** - Instructor: [Dr. Saeed Parsa](#) Spring 2024
- **Operating Systems** - Instructor: [Dr. Reza Entezari Maleki](#) Fall 2023 & Spring 2024
- **Software Engineering** - Instructor: [Dr. Behrouz Minaei Bidgoli](#) & [Dr. Mehrdad Ashtiani](#) Fall 2023

## Selected Academic Projects

### RAG - Evaluation of Different Generators

IUST

Fundamentals of Natural Language Processing Course Project - [GitHub](#)

Spring 2024

- Description: Explored Retrieval-Augmented Generation (RAG) with different LLMs to address outdated or incorrect information. Judged LLM responses with another language model for accuracy.

### Text Generation Using RAG on Organizational Reports

IUST

Fundamentals of Natural Language Processing Course Project - [GitHub](#)

Spring 2024

- Description: Applied RAG to generate accurate answers from organizational reports, ensuring real-time, relevant responses based on report content.

### Anti-Spoofing System for Facial Recognition

IUST

Fundamentals of Computer Vision Course Project - [GitHub](#)

Spring 2024

- Description: Developed a facial spoofing detection system using two approaches: feature extraction for reduced dimensionality and high classification accuracy, and CNNs for deep learning-based spoof detection. Compared both methods, highlighting trade-offs between traditional machine learning and deep learning. Evaluated the model's effectiveness in detecting liveness from video data.
- Technologies: Python, OpenCV, TensorFlow, Keras, MobileNet

### Sentiment Analysis on Persian Text Using Natural Language Processing (NLP)

IUST

Deep Learning Course Project - [GitHub](#)

Fall 2023

- Description: Built a sentiment analysis model for Persian text using the XLM-RoBERTa transformer to detect six emotions (Anger, Fear, Happiness, Sadness, Wonder, Hatred). Preprocessed data using NLP techniques and fine-tuned on the ArmanEmo dataset, achieving 75.23% accuracy. Conducted experiments to validate model robustness and benchmarked performance against other architectures.

<b>Irangard - A Website for Finding Tours, Places and Events Throughout Iran</b>	IUST
Software Engineering Course Project - <a href="#">GitHub</a>	Feb. 2023 - Jul. 2023
<ul style="list-style-type: none"> <li>- Description: Developed a comprehensive system to assist its users to build a profile, find or register places, tours and events throughout Iran.</li> <li>- Implemented the Front-End application using the React.js framework and Sass and included automated CI/CD and Integrated social media features, including chat, posts, and user follow options.</li> </ul>	

<b>AI-Powered Solution for Lunar Lander Problem</b>	IUST
Artificial Intelligence Course Project - <a href="#">GitHub</a>	Fall 2022
<ul style="list-style-type: none"> <li>- Description: Developed and implemented a reinforcement learning-based agent to solve the Gymnasium Lunar Lander Problem, optimizing for speed and convergence. Hyperparameter tuning led to significant improvements in learning efficiency and solution optimality. Project ranked in top 3 in the class.</li> </ul>	

## Honors & Certificates

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<b>Digital Image Processing and Computer Vision</b>	Feb. 2024
Certificate on <a href="#">LinkedIn</a>	
<ul style="list-style-type: none"> <li>- Covered Topics about NNs, MLP, CNNs, Transfer Learning, Data Augmentation, Image Segmentation, Object Detection</li> </ul>	
<b>Neural Networks and Deep Learning</b>	Feb. 2024
Certificate on <a href="#">Coursera.org</a>	
<b>Supervised Machine Learning: Regression and Classification</b>	Oct. 2023
Certificate on <a href="#">Coursera.org</a>	
<b>Algorithmic Toolbox</b>	Jun. 2022
Certificate on <a href="#">Coursera.com</a>	
<b>Programming for Everybody (Getting Started with Python)</b>	Mar. 2022
Certificate on <a href="#">Coursera.com</a>	
<b>Python Data Structures</b>	Apr. 2022
Certificate on <a href="#">Coursera.com</a>	
<b>Ranked within the top 0.5% (581st) in the Iranian University Entrance Exam</b>	Jul. 2020
Mathematics and Physics Major	
<ul style="list-style-type: none"> <li>- Ranked 581st among more than 135,000 participants</li> </ul>	

## Languages

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- **Persian:** Native
- **English:** Full Professional Proficiency
  - TOEFL iBT: Overall: **105**, Reading: **27**, Listening: **26**, Speaking: **23**, Writing: **29**

## References

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<b>Dr. Reza Entezari-Maleki</b>	Iran University of Science & Technology
Assistant Professor in the School of Computer Engineering	
<ul style="list-style-type: none"> <li>- Email: <a href="mailto:entezari@iust.ac.ir">entezari@iust.ac.ir</a></li> </ul>	
<b>Dr. Nasser Mozayani</b>	Iran University of Science & Technology
Associate Professor in the School of Computer Engineering	
<ul style="list-style-type: none"> <li>- Email: <a href="mailto:mozayani@iust.ac.ir">mozayani@iust.ac.ir</a></li> </ul>	
<b>Dr. Mehrdad Ashtiani</b>	Iran University of Science & Technology
Assistant Professor in the School of Computer Engineering	
<ul style="list-style-type: none"> <li>- Email: <a href="mailto:m_ashtiani@iust.ac.ir">m_ashtiani@iust.ac.ir</a></li> </ul>	