

Education

- **University of Tehran** Tehran, Iran
Bachelor of Computer Science; GPA: 17.55/20 (Overall: 3.61/3, Last two years: 3.73/4) *Sep 2019 - Present*
- **Yekan High School** Rasht, Iran
Diploma of Mathematics and Physics; GPA: 19.5/20 (4/4) *Sep 2016 - June 2019*

Research Interests

- Multimodal Signal Processing
- Natural Language Processing
- Computer Vision

Research Experiences and Internships

Research Assistant at **LT Research Group** **University of Hamburg, Germany**

Under [Prof. Chriss Beimann](#) and [Florian Schneider](#)

- **State-of-the-Art Multi-Modal LLMs for Text-Video Retrieval** *May 2023 - Present*
Developing a Retrieval-Augmented Generation (RAG) system utilizing Video-LLAMA as the Language Model for zero-shot retrieval and/or Visual Question Answering. Additionally, experimenting with XCLIP and integrated encoders from Video-LLAMA for enhanced performance.
- **Video Retrieval Application** *Feb 2023 - Apr 2023*
Designed a video retrieval application with the objective of delivering the top k most relevant videos to users based on their input text and preferred model selection.

Visiting Scholar at **ESAT** **KU Leuven, Belgium**

Under [Prof. Hugo Van Hamme](#)

July 2022 - Sep 2022

- **Relating Output Symbol Probabilities With Confidence in an End-to-End Speech Recognizer**
Evaluated the accuracy of a speech recognition network's results in terms of predicted probabilities. Despite the network's uncertainty in its predictions, particularly with low probabilities, we endeavored to address this issue in our paper. Our approach involved providing prediction patterns to a specially designed model to improve the evaluation of probabilities.

Bachelor's Thesis **University of Tehran, Iran**

Under [Prof. Bagher BabaAli](#)

April 2023 - July 2023

- **Investigating the relationship between a person's written text and their suicide using text mining and machine learning methods**
Developed a high-precision model for identifying suicidal behavior signals using text mining and a combination of machine learning and deep learning techniques. Utilized Reddit data and achieved remarkable accuracy with methods like Support Vector Machines, Random Forests, and Neural Networks. This research contributes to early detection and intervention in suicide prevention, advancing public health research.

Selected Courses

- Image Processing (Graduate Course) (4/4)
- Data Mining (4/4)
- Deep Learning (4/4)
- Advanced Information Retrieval (4/4)
- Artificial Intelligence (4/4)
- Probability 1 (3/4)
- Linear Algebra (4/4)
- Design and Analysis of Algorithms (4/4)

Teaching Assistant Experience

Department of Mathematics, Statistics and Computer Science, **University of Tehran**

- **Fundamentals of Computer Science and Programming** *Fall 2021, Spring 2021, Fall 2022*
Responsibilities: Designing assignments, assessing students' works, and providing feedback. I also orchestrated the final project, evaluating all student presentations.
- **Data Structures and Algorithms** *Spring 2021, Fall 2022*
Responsibilities: Contributing significantly by designing assignments, conducting tutorials, and serving as the Head Teaching Assistant. This role involved evaluating the work of other teaching assistants and collaborating closely with the course professor to improve the teaching process.
- **Fundamentals of Combinatorics** *Spring 2021*
Responsibilities: Supporting student learning by creating tutorials and crafting homework assignments.
- **Design and Analysis of Algorithms** *Fall 2022*
Responsibilities: Reviewing and providing feedback on students' answers to assignments, as well as offering assistance to students facing challenges related to the course material.

Projects

Classifying Grapevine Leaves

Python, Scikit-Learn, TensorFlow, Matplotlib, NumPy

Data Mining course's Final Project

Leveraged transfer learning to implement diverse Convolutional Neural Network models for grapevine leaf classification. Enhanced results by using autoencoders and data augmentation techniques

Histopathology Image Classification

Python, Keras, OpenCV, Pandas, Scikit-Learn, PIL, Seaborn

Image Processing course's Project

Developed and compared Deep Learning models for Image Classification. Achieved competitive performance with a custom CNN model, an enhanced CNN architecture, and fine-tuned ResNet50.

Assembly Image Processing

Assembly

Assembly course's Mini-Project

Contributed to an assembly code project for BMP image processing, involving file manipulation, system calls, and pixel-level operations for Linux environments.

Vowel Finding on Persian Dataset

Python, Scikit-Learn, Persian Stemmer, NumPy, Pandas

Information Retrieval course's Mini-project

Utilized the Bijankhan corpus to identify vowels in Persian words, enhancing performance with additional features and employing various machine learning algorithms, including Naive Bayes, Decision Trees, Perceptron, and Logistic Regression.

Parkinson's Disease Classification

Python, Scikit-Learn, Seaborn, NumPy, Pandas, SciPy

Data Mining course's Mini-project

Dedicated this project to the classification of Parkinson's disease utilizing Machine Learning techniques. Employed Decision Trees, K-Nearest Neighbors, Support Vector Machines, and Random Forest algorithms for the task. Additionally, incorporated Principal Component Analysis to enhance the analysis.

Sentiment Analysis

Python, Scikit-Learn, NLTK, NumPy, Pandas

Information Retrieval course's Mini-project

Employed the Naive Bayes method, along with the utilization of stemming and lemmatization techniques, as well as TF-IDF vectorization, for the purpose of labeling tweets within the SandersPosNeg dataset.

Bio-Computing Projects

Python, NumPy, Matplotlib, Pandas

N Agents using Ant Colony , TSP using Genetic Algorithm, TSP using Self-Organizing Map ,Cutting Stock Problem using Simulated Annealing ,N Queens Puzzle using Memetic Algorithm

Multi-Flag Maze Q-Learning

Python, NumPy, NetworkX, Matplotlib

Artificial Intelligence course's Project

Developed a Q-Learning system for flag collection in complex mazes. Custom mazes with flags and obstacles were designed, and Q-Learning parameters were optimized. The project also included graphical Q-table representations.

House Price Prediction

Python, Numpy, Pandas, Scikit-Learn, Keras, Tensorflow

Statistical Methods course's Final Project

This project involved data exploration, feature engineering, and model development. Various regression models, including Decision Trees, were leveraged, with Decision Trees yielding the lowest Mean Absolute Error, demonstrating excellent model selection and evaluation skills.

Database Design

SQL

Database course's Final Project

Designed and implemented a comprehensive DBMS for an online shop, including database requirements analysis, ER diagram creation, BCNF normalization, MySQL implementation through DataGrip, and the development of views, triggers, functions, and stored procedures.

Messenger

Python, mysql.connector, server, sys

Database Design Project

Developed a secure Python-based messenger app integrated with a MySQL database, showcasing server management, user registration, authentication, and messaging functionality, including message history and user blocking. This project emphasizes Python proficiency, database skills, and user-focused application development.

Online Notable Courses

- **Machine Learning** (Coursera) *October 2021*
Topics include: Supervised learning (SVM, Kernels, Neural Networks), Unsupervised learning (Clustering, Dimensionality Reduction, Recommender Systems, Deep Learning)
- **Deep Learning Specialization** (Coursera) *March 2022 - December 2022*
[Neural Networks and Deep Learning](#), [Improving Deep Neural Networks](#), [Structuring Machine Learning Projects](#).

Honors and Awards

- **Achieved Six Out of Eight Semesters of Excellence in Term** *2019 - 2023*
An official title given by the University of Tehran to students with academic excellence.
- **Awarded Undergraduate Tuition Fee Waiver** *2019 - 2023*
Ranked top 1% among 164,000 students in the national university entrance exam.

Skills Summary

- **Programming Languages:**
 - Experienced in Python, C++
 - Familiar with Assembly, R, Octave, SQL
- **Tools and Libraries:** Pytorch, MySQL, Keras, TensorFlow, Scikit-Learn, Docker, Git, L^AT_EX
- **OS:** MacOS, Linux, Windows
- **Soft Skills:** Project Management, Technical Writing, Time Management, Teamwork, Communication, Problem Solving, Leadership Accountability, Flexible and Adaptable

Languages

- **English:** Fluent
- **Persian:** Native