Avisa **Fallah**

School of Mathematics, Statistics and Computer Science, University of Tehran, Tehran, Iran.

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Education

College of Mathematics, Statistics and Computer Science, University of Tehran — *Tehran, Iran*

B.Sc. in Computer Science (Major Study) — *Sep. 2019 - present*

- CGPA: 18.34/20 via 117 units (3.7/4)
- Last year GPA: 19.42/20 (4/4)

Farzanegan High School — *Tehran, Iran*

Highschool, Mathematics and Physics — *Sep 2016 - Jul. 2018*

- CGPA: 19.59/20

Negaresh High School — *Tehran, Iran*

Diploma in Mathematics and Physics Discipline — *Sep 2018 - Jul. 2019*

- CGPA: 19.61/20

Research Interests

- **NeuroScience**
- **Image Processing & Vision**
- **Generative Adversarial Network (GAN)**
- **Artificial Intelligence in Art**
- **Augmented Reality**
- **Virtual Reality**

Relevant Courses

- **Artificial Intelligence (20/20)**
- **Linear Algebra (19.4/20)**
- **Database Management Systems (20/20)**
- **Probability 1 (17.5/20)**
- **Statistical Methods (18.75/20)**
- **Strategic Games 1 (18.5/20)**
- **Image Processing (18/20)**
- **General Biology (20/20)**
- **Design and Analysis of Algorithms (20/20)**
- **Fundamentals of Software Design (20/20)**
- **Fundamentals of Computer Science and Programming (20/20)**
- **Advanced Programming (20/20)**

Publications

Keramati A., Fallah A., and Taghiyareh F. (2023). **"Enhanced Iranian Integrated Healthcare System Through Root Cause Analysis"**. Iranian Conference on Advances in Enterprise Architecture. Affiliated with IEEE Xplore. (under review)

Research Experience

Under the supervision of Prof. K. Kavousi — *University of Tehran*

Research Assistant at Iranian Bioinformatics Society (IBIS) — *Sep. 2023 - present*

In our current focus on mental disorders and diseases, we have initiated several new Requests for Proposals (RFPs) aimed at diagnosing and developing treatment strategies for mental illnesses. Leveraging a combination of advanced AI tools and algorithms along with bioinformatics knowledge, we are endeavoring to propose various pathways and solutions to address our knowledge gaps in assisting these patients.

Academic Experience

University of Tehran Computer Science Students' Scientific Chapter

The Deputy Head Computer Science Students' Scientific Chapter *Dec. 2021 - Apr. 2023*

Teaching Experience at University of Tehran

Head Teaching Assistant Calculus 1, Prof. Gh. Rokni Lamouki *Aug. 2023 - Present*
Supervising Teaching Assistant Discrete Mathematics, Prof. S. Mohammadi *Aug. 2023 - Present*
Teaching Assistant Database Management System, Prof. M. Goodarzi *Aug. 2023 - Present*
Head Teaching Assistant General Mathematics 2, Prof. Gh. Rokni Lamouki *Feb. 2023 - Aug. 2023*
Teaching Assistant Fundamentals of Computer Science and Programming, Prof. M. Goodarzi *Feb. 2023 - Aug. 2023*
Teaching Assistant Discrete Mathematics, Prof. S. Mohammadi *Aug. 2022 - Aug. 2023*
Teaching Assistant Advanced Programming, Prof. H. Sajedi Mrs. F. Halataei *Aug. 2022 - Feb. 2023*
Teaching Assistant Linear Algebra, Prof. M. Sarafraz *Aug. 2022 - Feb. 2023*
Teaching Assistant General Mathematics 2,Prof. A. Hosseini *Aug. 2021 - Aug. 2022*

Academic Projects

The Tour De Flags Maze *Artificial Intelligence*

Q-Learning

The main goal of this project was to design an agent capable of efficiently collecting multiple flags within the maze while navigating to the target cell. I trained the agent with Q-Learning, optimized learning parameters (alpha and gamma), and finally, visualized the learning progress visualized the learning progress with graphical representation using tkinter library in python.

8-Puzzle *Artificial Intelligence*

Search Algorithms

In this project, I implemented the 8-puzzle problem, focusing on minimizing execution time using various search algorithms (Heuristic, DFS, BFS, UCS, IDS, A*), alongside code optimization techniques.

Four-Connect *Artificial Intelligence*

Minimax, Minimax with alpha-beta pruning, and Monte Carlo Tree Search

In this project, I implemented the Four-Connect game in multiple game modes, including two-player, human-AI, and AI-AI gameplay. I utilized Minimax, Minimax with alpha-beta pruning, and Monte Carlo Tree Search algorithms for gameplay logic. Additionally, I created the graphical interface using the pygame library.

Blood cell Classification *Image processing*

Convolutional Neural Network (CNN)

In this project, I implemented four different convolutional neural networks (CNNs) to classify normal (healthy) and abnormal (unhealthy) blood cells. The models achieved highly accurate and effective classification results.

Kurdish Handwritten Character Recognition *Image processing*

Convolutional Neural Network (CNN)

In this project, I implemented four different convolutional neural networks (CNNs) for Kurdish handwritten character recognition, achieving an impressive accuracy rate of 97 percent.

English Handwritten Character Recognition *Mathematics Laboratory*

Neural Network

In this project, I constructed a neural network model using the Keras and TensorFlow libraries to classify the A-Z Handwritten Alphabets dataset, which comprises 372,450 images of handwritten english alphabet characters.

Persian Handwritten Digit Recognition *Mathematics Laboratory*

Feed-Forward Neural Network

In this project, I developed a feed-forward neural network from scratch for classifying a dataset consisting of 102,352 images of persian handwritten digits.

Certifications

Workshop on "How to be a Teaching Assistant" University of Tehran *Nov. 2022*
Digital Painting Tehran Institute of Technology *Jan. 2023*
Strategic Thinking Tehran Institute of Technology *Mar. 2023*
Supervised Machine Learning: Regression and Classification DeepLearning.AI *Aug. 2023*
Build Basic Generative Adversarial Networks (GANs) DeepLearning.AI *Sep. 2023*
Neural Networks and Deep Learning DeepLearning.AI *Sep. 2023*
Adobe Illustrator Comprehensive Course Inverse School *present*
Blender Comprehensive Course Inverse School *present*

Skills

Programming Languages Python, C/C++, LaTeX, MATLAB, MySQL, R
Frameworks & Libraries NumPy, TensorFlow, Keras, scikit-learn, Pandas, PyTorch
Technical Photoshop, Blender, Illustrator
Software Engineering Familiar with multiple design patterns.
Soft Skills Creativity, Team work, Problem Solving, Social Communication

Interests

- **Painting**
- **Singing**
- **Playing Volleyball**
- **Swimming**
- **Writing**
- **Reading Poem and Novel**
- **Listening to music**
- **Watching Movies**
- **Photography**
- **Helping Charity**

Languages

Persian Native
English Proficient
Arabic Familiar