Samira **Hajizadeh**

Electrical and Computer Engineering · Student

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Education

B.Sc. in Electrical Engineering — *2019 - Present*

College of Electrical and Computer Engineering, University of Tehran — *Tehran, Iran*

- Control Engineering Speciality
- Minor in Computer Engineering
- **Cum. GPA: 3.82/4 (17.38/20)**

High School Diploma in Mathematics and Physics — *2013 - 2019*

National Organization for Development of Exceptional Talents — *Bushehr, Iran*

- **Cum. GPA: 4.0/4.0**

Research Interests

- **Machine Learning**
- **Computer Vision**
- **Medical Imaging**
- **Autonomous Vehicles**
- **Reinforcement Learning**
- **Augmented and Virtual Reality**

Honors & Awards

June 2019 **Ranked 359 (Top 0.2%) amongst 164000 participants**, National Mathematics Entrance Exam

June 2019 **Ranked 39 (Top 0.02%) among 165500 participants**, National Foreign Languages Entrance Exam

Jul. 2016 **Accepted in the first part**, National Mathematics Olympiad

Reseach Experience

Research Assistant — *Tehran, Iran*

Deep Learning Project on Detecting Diseases by Retinal Image — *Sep. 2021 – Present*

- Assessing the overall health of an individual by detecting various patterns established in their retinal fundus images
- NBIC Research Center, University of Tehran
- Supervised by Dr. Abdol-hossein Vahabie

Summer Intern — *Tehran, Iran*

Anomaly Detection and Localization — *July 2022 -- October 2022*

- Research on state-of-the-art image and video anomaly detection and localization approaches
- Sharif University of Technology
- Supervised by Dr. Mohammad Hossein Rohban

Teaching Experience

Teaching Assistant — *University of Tehran, Iran*

- **Engineering Probability and Statistics Course** - Prof. Mohammad-Reza Abolghasemi Dehaqani - *(Sep. 2021 – Present)*
- **Electric Machines Course** - Prof. Moein Abedini - *(Feb. 2022 – July 2022)*

Courses & Certificates

University of Tehran

- **Term 8**: Game Theory, Computer Networks, Digital Control Systems, Data Structure
- **Term 7**: Intelligent Systems, Instrumentation, Operational Research, Modern Control Systems
- **Term 6**: Neural Networks and Deep Learning, Mechatronics, Industrial Automation, Artificial Intelligence
- **Term 5**: Linear Control Systems, Engineering Economy
- **Term 4**: Signals and Systems
- **Term 3**: Advanced Programming, Engineering Probability and Statistics, Engineering Mathematics, Numerical Computation
- **Term 2**: Introduction to Computing Systems and Programming, Differential Equations

Coursera

- Machine Learning, (Instructor: Andrew Ng)

University of Tehran IEEE Student Branch

- Atmel AVR Microcontroller Practical Learning

Notable Projects

Intelligent Systems Course Projects | Python, Artificial Intelligence, Machine Learning, Computer Vision *2022*
- *Video object detection*: Using YOLOv3 and COCO dataset
- *Teaching a taxi cab to drive around*: Using moodel free reinforcement learning, Q-learning, and OpenAi Gym.
- *Titanic dataset classification*: Using bagging decision tree and random forest methods.
- *Iris dataset clustering*: Using normal and advanced k-means algorithms.
- *CIFAR-10 dataset classification*: MLP and CNN *Using EfficientNet for Transfer Learning*
- *Classifying data using Naive Bayes*

Instrumentation Course Projects | ESP32 Microcontroller, Arduino, MQTT, Node-Red *2022*
- *Smart Weather Station*: Monitoring temperature and humidity using SHT20 sensor and publishing it on server by MQTT and Node-Red.
- *Temperature Chamber Design*: Creating a temperature chamber from scratch to test the sensitivity of the former project in various temperatures.

Modeling a Magnetic Levitation System | MATLAB, Simulink, Control theory, PID Controller *2022*

Simulating the behavior of a levitating object in a magnetic field, using a combination of differential equations and control theory to accurately represent the dynamics of the system.

ECG AND PPG RECEIVING MODULE | MATLAB, Arduino, Signal Processing, ECG, PPG *2021 - 2022*

Designing a portable device that can receives PPG and ECG signals simultaneously using MATLAB, Arduino, and the MAX30100 and MAX86150 sensors under the supervision of Dr. Saeed Akhavan

Neural Networks and Deep Learning Course Projects | Python, Deep Learning, Computer Vision, NLP, GAN *2021 - 2022*
- Offensive Language Detection with BERT and Hatebert Networks
- Harry Potter and the Goblet of Fire Text Generation using LSTM
- Apple and Google Stock Price Prediction using LSTM network
- Creating abstract artworks using DCGAN
- Role prediction using Bidirectional Associative Memory (BAM)
- Face Recognition Using Discrete Hopfield Network
- Pattern Association using Hebbian Learning Rule and Auto-associative Nets
- Classification and Regression of CIFAR-10 dataset Using MLP Networks

Artificial Intelligence | Python, Search Algorithms, Decision Trees *2021 - 2022*
- *Gandalf the Grey and the Fellowship of the Ring*: Using BFS, IDS, and A* Search Algorithms to help Gandalf deliver the fellowship to Gondor.
- *Text Decryption*: using genetics algorithm.
- *Persian Text Label Detection*: Using Stemming, Lemmatization, Bag of Words, and Naive Bayes method.
- *Spotify Dataset Music Genre Classification*: Using Decision Tree and Random Forest.

Automated Warehouse | Ladder Programming, TIA Portal, Factory I/O *2021 - 2022*

Simulating an Automated Warehouse using TIA Portal's ladder programming and Factory I/O software. The program automates conveyor belts, sensors, and robots to optimize efficiency, reduce errors, and minimize downtime.

Soccer Stars Simulation | C++, Object Oriented Programming, Clean Coding *2020*

Developed a Soccer Stars Game Simulation using C++ and RSDL library, featuring object-oriented design, event-driven programming, and physics simulation, providing a realistic gameplay experience for users.

Skills

Programming	Python, C++, C, Verilog/System Verilog, Familiar with OOP and Clean Coding
Machine Learning	CNNs, Clustering and Classification, Anomaly Detection
Machine Learning Tools	Pytorch, Keras, Pandas, NumPy, Scikit-Learn, Matplotlib
Computer Vision	OpenCV, YOLO
Applications	MATLAB, Octave, TIA Portal, Factory IO, Modelsim, Quartus, Multisim, Proteus, CodeVisionAVR, Visual Studio
Microcontroller	Atmel AVR, Arduino
Other	Linux, HTML and CSS, LaTeX

Languages

English	Proficient
Farsi	Native