Mobina Salavati

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Research Interests

Deep Learning, Machine Learning, Applied Artificial Intelligence, LLMs, Computer Vision

Education

University of Tehran — Tehran, Iran
B.Sc. in Engineering Science — Sep 2018 – Jan 2023
GPA: 3.43/4.0 (16.17/20), GPA Last 2 years: 3.59/4.0 (16.93/20)

National Organization for Development of Exceptional Talents School Semnan, Iran
High School Diploma in Mathematics and Physics — Sep 2013 – Jun 2017

Honors & Awards

- Ranked among the top three undergraduate projects (2023)
- Ranked in the top 0.5% nationwide in the Iranian University Entrance Exam (2018).

Publications

Lee, L., Jeon, J., **Salavati, M.**, Amini, N. "AI-Driven Monitoring of Eyedrop Instillation Adherence in Glaucoma." Submitted to the 20th International Symposium on Visual Computing (ISVC 2025), Las Vegas, NV.

Research Experience

Research Intern, Lee Language Lab (L^3), Ontario Tech University & University of Toronto — Remote/Canada
Supervisors: Dr. Annie En-Shiun Lee, Dr. Muhammad Usman

- Developed a multilingual 3D avatar chatbot for student wellness using NVIDIA Omniverse, Audio2Face, and uLipSync.
- Implemented journaling and task management tools for productivity support.
- Designed and evaluated modular system architecture.

Research Intern, California State University, Los Angeles — Remote/USA
Supervisor: Dr. Navid Amini

- Developed a sensor-integrated eyedrop device for adherence monitoring in glaucoma patients.
- Benchmarked ML/DL models (Decision Tree, Random Forest, SVM, LSTM) for prediction accuracy.

Research Intern, CogAI4Sci, National University of Singapore — Remote/Singapore
Supervisor: Dr. Dianbo Liu

- Analyzed Humphrey Visual Field (HVF) data to identify patient's visual field issues.

Research Intern, Engineering Science Lab (ESLAB), University of Tehran — Tehran, Iran
Supervisor: Dr. Ehsan Maani Miandoab

- Designed a machine vision algorithm for automated surface defect detection.

Undergraduate Research Project, University of Tehran
Supervisors: Dr. Ehsan Maani Miandoab, Dr. Hadi Amiri; Co-advisor: Dr. Navid Amini

- Built a nonlinear DC motor dynamics using NARX for data-driven control of uncertain systems.
- Implemented real-time control using Arduino and MATLAB for practical validation.

Independent Projects

- Modified FTTH modem firmware for embedded system optimization.
- Developed an AI-powered assistant using OpenAI API and LangChain.

Teaching Experience

Teaching Assistant – Linear Control Systems, University of Tehran
Instructor: Dr. Ehsan Maani Miandoab

- Designed and graded homework, quizzes, and computer-based assignments for undergraduate students.

Technical Skills

Programming: Python, C/C++, Java, MATLAB, Verilog/SystemVerilog
AI/ML Frameworks: PyTorch, Keras, Scikit-learn, Pandas, NumPy, OpenCV, LangChain
Tools & Platforms: Arduino, NVIDIA Omniverse, Jupyter Notebook, Altium Designer, Simulink/Simscape
Operating Systems: Linux (Ubuntu), RTOS, xv6
Other: LaTeX, PCB/Schematic design

Selected Projects

Machine Learning & AI

- Implemented ARIMA/ARMA models for time-series forecasting.
- Developed ML classifiers using Decision Trees and K-Means.
- Built handwriting recognition and image segmentation models with TensorFlow/Keras.
- Trained a multilayer perceptron (MLP) for CIFAR-10 image classification.

Neural Networks & Deep Learning

- Predicted Boston housing prices using MLP regression.
- Implemented Minimax with alpha–beta pruning and a genetic algorithm for optimization.

Systems & Programming

- Designed and implemented multilevel feedback queue scheduling (lottery, HRRN, SRPF) in xv6 OS.
- Built an ensemble classifier using inter-process communication (named/unnamed pipes).

Mechatronics & Signal Processing

- Programmed MPU6050 with Arduino; simulated robot kinematics in Python; controlled TurtleBot3 in Gazebo with MoveIt.
- Designed digital filters, implemented noise removal, and developed audio watermarking algorithms.

Languages

English: Fluent (IELTS 6.5: L 7.5, R 6, S 6.5, W 6.5)
Persian: Native