# Mobina Salavati

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## Education

### University of Tehran
Tehran, Iran

Bachelor of Science in Engineering Science — Sep. 2018 – Jan. 2023

- Overall 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

2023 Undergraduate project was awarded as **one of the first three tops**.

2018 **Ranked 932nd** among more than 150,000 candidates in Iranian University entrance exam (B.Sc.).

## Research Experience

### Internship, ESLAB (Engineering Science Laboratory) at the University of Tehran
Supervisor: **Dr. Ehsan Maani Miandoab** | Email Address: e.maani@ut.ac.ir

- **Computer vision:**
  - Machine Vision Detection Method for Surface Defects

### Undergraduate Project at the University of Tehran
Supervisor: **Dr. Ehsan Maani Miandoab – Dr. Hadi Amiri** | Email Address: e.maani@ut.ac.ir – hadi.amiri@ut.ac.ir

- **Computer vision:**
  - Machine Vision Detection Method for Surface Defects
- **Implementation of data-driven control on the system with uncertain dynamics:**
  - Nonlinear DC motor modeling with NARX
  - Practical implementation using Arduino board and MATLAB software

### Internship, CogAI4Sci (Cognitive AI for Science) at National University of Singapore
Supervisor: **Dr. Dianbo Liu** | Email Address: dianbo@nus.edu.sg

- **Identifying the patient's visual field issues through the analysis of Humphery Visual Field (HVF) data**

### Internship, University of Southampton
Supervisor: **Dr. Sasan Barak** | Email Address: s.barak@soton.ac.uk

- **Cryptocurrency Hedge Fund performance**

## Skills

| | |
|---|---|
| **Industry Knowledge** | Machine Learning, Artificial Intelligence, Neural Network, Deep Learning, Object-Oriented Programming(OOP). |
| **Programming Languages** | Python, C/C++, Java, MATLAB, Simulink & Simscape, Verilog, System Verilog. |
| **Frameworks & Libraries** | Numpy, Pytorch, Pandas, Keras, Scikit-learn, VPython, OpenCV. |
| **Operating System** | Linux(Ubuntu), xv6, RTOS. |
| **Other Technologies** | Jupyter Notebook, Latex, Altium designer(Design PCB and schematic). |

# Teaching Assistance Experience

### Linear Control Systems

Instructor: **Dr. Ehsan Maani Miandoab**
Responsibilities: Homework Designer and Grader, Computer Assignment Grader, Quiz Designer.

# Course Projects

### Artificial Intelligence

- **Machine Learning**
  - Predict Future Data Using ARMA and ARIMA models
  - Classification Data with Decision Tree and K-Means Algorithm
  - Dimensionality Reduction and PCA
  - Trains a Neural Network model to Classify Images of Clothing in Fashion MNIST dataset
- **Artificial Intelligence**
  - Implementation of Informed and Uninformed Search Algorithms
  - Implementation of Minimax Algorithm with Alpha-Beta Pruning
  - Deciphering Encrypted File using Genetic Algorithm
  - Implementation of Naive Bayes Algorithm for Multiclass Classification
  - Model Training, Evaluation and Hyper Parameter Tuning with Scikit-Learn library
  - Use a Feedforward Neural Network Algorithm for Classification MNIST dataset
  - Handwriting Recognition using Tensorflow and Keras
- **Neural Network & Deep Learning**
  - Implementation of Perceptron, Adaline and Madaline Network
  - Creating a Multilayer Perceptron (MLP) Model to Classify CIFAR-10 dataset images
  - Boston House Price Prediction using MLP Regression
  - Image Segmentation Using Deep Learning

### Computer Engineering

- **Advanced Programming**
  - Introduction to Event Driven Programming in C++ with implementing a game similar to Miniclip
  - Implementing UTunes with a special focus on object-oriented programming principles as a local web application to behave like Spotify in C++
  - Implementing Mafia Game with a special focus on multi file programming and using Makefile
- **Operating Systems & Operating Systems Lab**
  - Getting familiar with Xv6, its execution, debugging, improving its console by adding some features, and implementing a new program to copy text data from a file to another
  - Implementing new system calls in Xv6, which sleep a process for an arbitrary period using Xv6's ticks, and obtain the current process's pid and its children and grandchildren
  - Implementing multilevel feedback queue scheduling (MFQ), including lottery, HRRN, and SRPF methods, as scheduling levels in xv6
  - Adding synchronization mechanisms to Xv6 to prevent out-of-order execution of processes and use mutex more than once in recursive programs
  - Implementing an ensemble classifier using named and unnamed pipes

- **Digital Logic Design**
  - Frequency Divider: Designed a frequency divider with 50% duty cycle in Verilog and synthesizing in Quartus
  - Function Generator: Simulated a function generator in Verilog and synthesized in Quartus
  - Clock Adjusting and Noise Eliminator: Synthesized in Quartus
- **Computer Architecture**
  - MIPS CPU: Designed pipeline MIPS CPU in Verilog and simulated in ModelSim

### Other activity:

- **Linear Controls**
  - Design Controllers with an Arduino
- **Mechatronics**
  - Program MPU 6050 With Arduino
  - Calculate Kinematics parameters of Serial Robots with python
  - Simulate LR Mate 200ic Robot in Simscape
  - Control a Gazebo simulated Turtlebot3 with MoveIt
- **Digital Signal Processing**
  - Remove Background Noise from Audio
  - Design of Digital Filters
  - Implementation Kernel Base Image Processing
  - Template Matching & Bleep Censor
  - Implementation Audio Watermark

## Relevant Courses

**Machine Learning** 17.16/20
Instructor: **Dr. Ali Kamandi**

**Artificial Intelligence** 16.30/20
Instructor: **Dr. Hakimeh Fadaei**

**Linear Algebra** 20/20
Instructor: **Dr. Hadi Amiri**

**Engineering Probability and Statistics** 16/20
Instructor: **Dr. Seyed Mahmood Taheri**

**Convex Optimization** 15.50/20
Instructor: **Dr. Hadi Amiri**

**Advanced Programming** 16.30/20
Instructor: **Dr. Ramtin Khosravi**

**Operating Systems** 15.10/20
Instructor: **Dr. Mehdi Kargahi**

**Operating Systems Lab** 15.10/20
Instructor: **Dr. Mehdi Kargahi**

**Software Engineering** 16.75/20
Instructor: **Dr. Fatemeh Qasemi Esfahani**

**Computer Architecture** 17.90/20
Instructor: **Dr. Saed Safari**

**Electronic I** 17.50/20
Instructor: **Dr. Mohammad Reza Kolahdooz**

**Electronic I Lab** 18.50/20
Instructor: **Dr. Hooriye Khodkari**

**Electronic II** 19.90/20
Instructor: **Dr. Shahin Jafarabadi Ashtiyani**

**Electronic II Lab** 19.00/20
Instructor: **Dr. Mohammad Reza Kolahdooz**

**Mechatronics** 16.50/20
Instructor: **Dr. Mehdi Tale Masoule**

**Linear Controls** 17.80/20
Instructor: **Dr. Ehsan Maani Miandoab**

**Operating Research** 17.50/20
Instructor: **Dr. Amin Qodosian**

## Languages

**English** : Fluent (Nov. 20, 2024)
**Persian** : Native