Mohammad Javad Ranjbar | CV

Amirkabir University of Technology–Department of Electrical Engineering
Tehran, Iran

+98-9120657462 • Mohammadjavadranjbarkalahroodi@gmail.com
MohammadJRanjbar.github.io • MohammadJ
MohammadJRanjbar

Education

- **Bachelor of Science in Electrical Engineering** 2016-2021
  Amirkabir University of Technology(AUT) – Tehran Polytechnic Tehran–Iran
  - Last four semesters GPA : **3.61/4** via 64 passed credits
  - Thesis Title: Facial Expression Recognition
    Supervisors: Dr. Mohammad Bagher Menhaj and Dr. Hassan Taheri

RESEARCH INTERESTS

- Machine Learning
- Deep Learning
- Computer Vision
- Human–robot interaction
- Data Mining
- Natural Language Processing

Teaching Experience

- **Machine learning teacher at Amirkabir Robotics and Programming school(FIRA Academy)**
  - I designed and taught an introduction to machine learning and computer vision course (2020 – 2021)

NOTABLE COURSES

- Introduction to Computational Intelligence A
  - Instructor: Dr. Farzaneh Abdollahi
- Introduction to Computational Intelligent lab A+
  - Instructor: Mr. M.H Amini
- An Introduction to Machine Learning A
  - Instructor :Dr. Sanaz Seyedin
- Microprocessor Systems Interfaces Lab A+
  - Instructor :Mr. Reza Zavari
- Computer Programming A
  - Instructor :Dr. Vahid Pourahmadi
- Advanced Programming Pass
  - Instructor :Dr. Amir Jahanshahi

Online Courses

- Machine Learning (In progress)
  - Instructor : Andrew Ng
  - Offered By : Stanford University
- Deep Learning Specialization (In progress)
  - Instructor : Andrew Ng
  - Offered By : Deeplearning.ai

Technical and Personal Skills

Programming/Scripting: Python (*Tensorflow, Keras, NLTK, OpenCV, SciPy, Scikit-learn, Pandas, Matplotlib, Numpy, Pygame, Pyaudio, Threading, PyQt, Xlsxwriter*), C/C++, C#, Matlab, VHDL, Assembly, HTML, MySQL, LaTeX

Simulation Tools and HardWares: ARM(STM32), Arduino, Raspberry Pi, NodeMCU, Simulink, Proteus, H SPICE, Advanced Design System.

IDEs/Tools: Jupyter Notebook, Google Colab, Visual Studio, Keil5, STM32 Cube MX, Microsoft Office, Word, Excel, PowerPoint, Adobe Photoshop, Adobe Premiere, Adobe Animate, After Effects, Unity, Git, Docker

Language: Persian(Native), English(Fluent), Toefl Score: 107 (R: 29, L: 30, S: 24, W: 24)

Work Experience

- **Undergraduate Research Assistant** 2020 – Present
  - I'm Working on facial expression recognition project at *Computer Intelligence and Large Scale System Research Lab*
- **Member of the production team of SWIMBot** (Designed for **Diginext**) March 2021
  - SWIMBot is a platform for implementing various applications such as image processing, mapping, obstacle avoidance and more.
- **Innovation Center of Amirkabir University of Technology** September 2019 – December 2020
  - Member of executive committee.
- **Internship** Summer 2020
  - I used Arduino nano to designe a low priced IR-remote dimmer at Internship at Canavat electric Iranian Arvand.
- **Staff member at The International Conference on Robotics and Mechatronics**
  - Member of secretariat team. November 2019

Selected Project

- **Facial expression recognition** Instructor : Dr. Mohammad Bagher Menhaj

  I used transfer learning to train a CNN Network. then, I implemented it on a personal assistant robot which based on the facial expression interacts with people by playing the proper song or showing emotions with gestures and more. (still in making).
- **Prediction of application's category based on their description** Personal Project

  Using NLTK and Hazm libraries to handle Persian language and training various models for predicting the correct category.
- **Game Recommender** Personal Project

  Implementing collaborative filtering to recommend games to users based on the similarity of users' history.
- **Snake game with Voice Control and Motion Detection** Instructor : Dr. Amir Jahanshahi

  I implemented the game with the help of the Pygame module, for the Voice control I trained a model with 4 wake words, for motion control I detected the movement of a specific colour and for the gesture recognition I trained a CNN model with 4 gestures.
- **Self-driving Car**

  Using OpenCV to detect lanes and control the car movement in the Avis Engine simulator.

- **Handwriting Digit Recognition** Instructor : Dr. Sanaz Seyedin

  I used Mnist dataset to train different convolutional neural network (CNN) with different activation functions and learning rates and compared their effects on loss and accuracy.

- **Fruit Classification using Deep Learning** Instructor : Dr. Farzaneh abdollahi

  I trained a Convolution Neural Network (CNN) with help of TensorFlow, for 4 different fruit and achieved high accuracy on test data. additionally, I used a pre-trained YOLO network for real-time fruit classification.

- **Titanic: Machine Learning from Disaster** Instructor : Dr. Farzaneh abdollahi

  First, I analyzed the data and eliminated the irrelevant features then I used multiple machine learning methods (Decision Tree, KNN and ...) to get the best result and finally, I achieved an accuracy around 71 percent.

- **2x2 Rubik's Cube Solver** Instructor : Dr. Amir Jahanshahi

  I implemented a program that user can play with 2x2 Rubik using commands. Also, user can give colors for the cube and the program will solve the Rubik using DLS(depth limited search) and will print the needed moves.

- **Face Recognition System** Instructor : Dr. Amir Jahanshahi

  Projecting image of face to subspace and classifying the face based on comparing its position in the face space with the positions of the known individuals. (Eigenfaces method)

- **Automated Irrigation System using STM32** Instructor : Dr. Saeid Sharifian

  I used stm32, LCD, keypad and YL-69 to implement an irrigation system. The LCD shows the menu, the user can choose how long the irrigation should be, and YL-69 is used to find out the soil condition.

- **Smart Temperature Control System using STM32** Instructor : Dr. Saeid Sharifian

  I used STM32, LM35, Stepper motor HCSR05 to make a smart temperature control system and also added a remote control to change setpoint using an Arduino Due.

- **Remote Dimmer** Instructor : Dr. Hassan Taheri

  I designed a low priced IR-remote dimmer using Arduino nano.

Honors and Awards

- Ranked within the top 0.15% among approximately 131000 participants in the national master entrance exam for Iranian universities. 2021
- Ranked within the top 0.25 percent among approximately 165000 participants in the national entrance examination for Iranian universities. 2016
- Accepted to take part in "Iranian Physics Olympiad stage 2 " from top 5 percent of participants. 2015
- Accepted Three times to take part in "Iranian Olympiad on Astronomy and Astrophysics stage 2 " from top 5 percent of participants. 2013, 2014, 2015

For further information, and proofs check my Gitub