Sepehr Karimi Arpanahi | CV

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RESEARCH INTERESTS

- Machine Learning
- Deep Learning
- Medical Imaging
- Computer Vision
- Image Processing
- Natural Language Processing

EDUCATION

- **Master of Science** 2021–present
  Tehran University *Tehran-Iran*
  - Computer Engineering Sep 2021- present
  - GPA: 16.98/20
  - *Superviser : Dr. Masoud Asadpour*
- **Bachelor of Science** Sep 2016–2021
  Amirkabir University of Technology *Tehran-Iran*
  - Electrical Engineering Sep 2016- Sep 2021
  - Overall GPA: 15.49/20
  - Last 2 years GPA: 17.6/20 via 67 credits
  - *Superviser : Dr. Mohammad Bagher Menhaj*

HONORS

- Ranked within the top 0.1% among approximately 131000 participants in the national master entrance exam for Iranian universities. 2021
- Ranked within the top 0.4% in the nationwide entrance exam for B.Sc. degree among 163000 participants. 2016
- Accepted to take part in "Iranian Computer Olympiad stage 2 " from top 5 percent of participants. 2015
- Studied at NODET (National Organization for Development of Exceptional Talents). 2009–2016

Work Experience

- **Undergraduate Research Assistant** 2020 – 2021
  - I was working on my thesis project (Comparison between applying reinforcement learning based methods to solve differential games) at *Computer Intelligence and Large Scale System Research Lab*
- **Innovation Center of Amirkabir University of Technology** 2019 – 2020
  - Member of executive committee.
- **Internship at Luxin Tech** Summer 2019
  - Controlling the surrounding and main lights of the house.

SELECTED PROJECTS

- Question Answering on knowledge graphs using DDQN Reinforcement learning Course Project [2023]
  - Built an RL-based agent that can answer complex multi-hop questions over a knowledge graph
  - Used the Doubled DQN algorithm to train the agent to learn to predict a sequence of actions to navigate the knowledge graph to find the correct answer
- Detecting COVID-19 with Chest X-Ray using PyTorch Coursera Project [2023]
  - Worked on developing a machine learning model to detect COVID-19 cases using X-ray images
  - Involved tasks such as data preprocessing, model training, and evaluation, with the goal of accurately classifying X-ray images
- Predicting the NBA regular season MVP using regression and classification Data Analysis Course Project [2023]
  - This project aims to predict which player will be awarded the Most Valuable Player (MVP) in the NBA for a specific season
  - The initial phase involves web scraping data from the basketball-reference.com website and loading it into

pandas for further analysis

- Developing a sound classification and clustering system based on emotions and provided comprehensive analysis of the results — Machine Learning Course Project [2022]
  - Developing a system to categorize sound data into different emotion groups.
  - Utilizing clustering algorithms to group similar sounds based on their emotional characteristics
- Developed machine learning classifiers for EEG data analysis — Machine Learning Course Project [2022]
  - Implementing machine learning algorithms to develop classifiers for Electroencephalography (EEG) data
  - Assessing the performance of different classifiers to determine the most effective approach for EEG data classification
- Comparison between applying reinforcement learning based methods to solve differential games — EE thesis, personal project [2021]
  - Creating a real-time interface for learning agents
  - A comparison between Q-learning and SARSA as methods of reinforcement learning
- Fruit classification using Deep learning — Introduction to Computational Intelligence, group project [2020]
  - 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.
- Hybrid Function Approximation Based Control with application to Prosthetic Legs — Advanced Robotics, group project [2020]
  - A hybrid controller for n-DOF robot
  - Apply controller to different uncertain models
- Bandits and exploration/exploitation — Fundamental of Reinforcement Learning course, personal project [2020]
- Music algorithm for Direction Of Arrival (DOA) estimation — Linear Algebra, personal project [2019]
- IOT Smart Home — Internship at Luxin Tech, group project [2019]
  - Controlling the surrounding and main lights of the house
  - Programming an STM32-ARM chip

SELECTED COURSES

- Advanced Robotics, graduate course 16.08/20
- Introduction to Computational Intelligence 17.5/20
- Linear Algebra 17.1/20
- Linear Optimization 17.9/20
- Computer Architecture 19.2/20
- Advanced Algorithms 18.8/20
- Data Analysis 19.2/20

Online Courses

- Reinforcement Learning Specialization [Done]
  - Instructors: Dr. Martha White, Dr. Adam White
  - Offered by: University of Alberta & Alberta Machine Intelligence Institute
- Introduction to Deep Learning [Done]
  - Instructors:Geena Kim
  - Offered by: University of Colorado
- Detecting COVID-19 with Chest X-Ray using PyTorch [Done]
  - Instructors: Amit Yadav

SKILLS

Programming/Scripting

- Python
  - Tensorflow
  - Keras
  - PyTorch
  - matplotlib
  - PyQt
- Django
- C/C++
- Matlab
- Maple
- Assembly
- Verilog
- VHDL
- LaTeX

IDEs/Tools

- Simulink
- Keil5
- Cube MX
- Proteus

Hardware

- STM32
- Arduino
- NodeMCU
- Raspberry pi

LANGUAGE SKILLS

- English Fluent - TOEFL score: 104 (Listening: 29, Reading: 27, Speaking: 25, Writing: 23)
- Persian Native