Ali Pakdel Samadi

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Education

College of Electric and Computer Engineering, University of Tehran — Tehran, Iran

B.Sc. in Computer Engineering (Software Engineering Major) — *Sep. 2019 - present*

- Cum. GPA: 18.26/20 (3.85/4)
- Related Courses: Artificial Intelligence: 19.2/20(4/40), Discrete Mathematics: 20/20(4/4), Engineering Probability and Statistics: 17.8/20(4/4), Real Time Embedded Systems: 18.5/20(4/4), Internet Engineering: 18.3/20(4/4)

College of Psychology and Education, University of Tehran — Tehran, Iran

Minor Study in Educational Science — *Sep. 2021 - Jul. 2023*

- Cum. GPA: 18.81/20 (4/4)
- Related Courses: Introduction to Psychological Tests (specialization): 20/20(4/4), Educational Sociology: 19/20(4/4), Educational Psychology: 18/20(4/4), Basics of Qualitative and Quantitative Research Methods: 17.5/20(4/4)

Allame Helli 4 High School — Tehran, Iran

Diploma in Mathematics and Physics — *2013 - 2019*

- GPA: 19.39/20
- As a part of the National Organization for Development of Exceptional Talents (NODET)
- Ranked 161 (Top 0.1%) in National University Entrance Exam

Research Interests

- Cognitive Science
- Computational Cognitive Science
- Neuroscience
- Brain and Behavior
- Brain–computer interfaces
- Human-computer Interaction

Research Experience

Under the supervision of Prof. H. Moradi — Advanced Robotics and Intelligent Systems

Research Assistant — *April 2023 - present*

We are working on Unity-based games as part of our cognitive sciences research through interactive gaming. One of these games was specifically designed to measure tapping frequency, accelerometer and gyroscopes sensors with the primary objective of collecting data for the study of Parkinson's disease detection. Another game was designed to assess the cognitive abilities of elderly individuals by targeting neuron-related tasks.

Under the supervision of Prof. M. Abolghasemi — Convergent Technologies Research Center

Research Assistant — *Oct. 2023 - present*

We are working on developing a mobile platform that seamlessly integrates with EEG devices like the EMOTIVE EPOC+ for real-time data collection and analysis. This innovation aims to advance cognitive research, healthcare, and neurofeedback systems by democratizing EEG data access, reducing barriers, and ensuring cost-efficiency.

Under the supervision of Prof. H. Kebriaei — University of Tehran

Research Assistant — *Aug. 2023 - present*

We are working in a research project that aims to advance trading strategies through the fusion of reinforcement learning and machine learning techniques. Our work focuses on developing innovative methods to make trading more effective and efficient.

Teaching Experience

University of Tehran

Supervising Teaching Assistant | *Discrete Mathematics* — *Fall 2022 - Spring 2023*

Teaching Assistant | *Database Design* — *Spring 2023 - Fall 2023*

Teaching Assistant | *Data Structures and Algorithms* — *Spring 2023 - Fall 2023*

Teaching Assistant | *Discrete Mathematics* — *Spring 2021 - Fall 2022 - Spring 2022*

Allameh Helli 4 High School — *Jul. 2019 - Oct 2019*

Study Guide

Work Experience

ZarinPal — Tehran, Iran

Software Developer — *Jul. 2022 - Aug. 2023*

We developed a library to connect multiple global and Iranian exchanges, enabling automated trading with various algorithms such, as cross-exchange arbitrage. I also led the effort to integrate Iranian exchanges with Hummingbot for advanced market-making strategies, demonstrating my dedication to advancing cryptocurrency trading and fostering innovation.

Certificates

Fundamentals of Reinforcement Learning University of Alberta — *Aug. 2023*

How to be a Teaching Assistant University of Tehran — *Nov. 2022*

Notable Academic Projects

Baloot | *A Fully Functioning Amazon Clone* — Internet Engineering

- A complete implementation of a website from scratch by me and my teammate. This project was developed using Java and Spring for the back-end, and React for its front-end. We have used tools like CI/CD pipelines, JDBC, JUnit, Github Oauth apps, etc

Smart Flower Pot | *Automated Watering System with Arduino* — Real Time Embedded Systems

- This project aims to create a smart flower pot system with three Arduino boards for automating plant care based on soil moisture and temperature levels. It uses sensors and Bluetooth communication to adjust irrigation.

XV6 Kernel | *Improved XV6 Kernel* — Operating Systems Lab

- Adding some new features such as new system calls, three new custom task schedulers, and a process synchronization (using semaphore) to xv6 kernel.

Handwriting Recognition | *Neural Network* — Artificial Intelligence

- This project involves implementing and comparing feed-forward neural networks in two phases. Firstly, we created a NumPy-based neural network to classify handwritten numbers from scratch. In the second phase, we utilized Keras and TensorFlow to build a model for recognizing handwritten alphabets.

Music Genre Prediction | *Machine Learning Methods* — Artificial Intelligence

- This project aims to predict the genre of music using machine learning methods, particularly with the Scikit-Learn library. We implemented and optimized k-nearest neighbors (KNN), decision tree, and random forest models to improve prediction efficiency.

Decoder | *Genetic Algorithm* — Artificial Intelligence

- This project aims to decode encoded text using a genetic algorithm. The algorithm generates a population of candidate keys and improves it through crossover and mutation.

Image Filtering | *Multi-Threaded Processing* — Operating Systems

- This project aims to implement both serial and parallel designs in C++ for applying various filters to an image and subsequently conduct a performance comparison between them.

Skills

Programming

- *High Intermediate:* C++, Python
- *Intermediate:* C, C#, Java, Verilog
- *Beginner:* GoLang, Latex

Technologies: Git, Docker, Maven, Makefile

Software Engineering: Familiar with multiple object-oriented design patterns. Efficient with function-based designs. Fully familiar with Agile development and its concepts.

Web Development: React, Spring

Game Development: Unity Engine

Operating Systems: Linux (Ubuntu), Windows

Languages

Persian Native

English Professional working proficiency **Academic IELTS:** 7.5/9 [R:9, L:7.5, S:6.5, W:6.5] (Oct. 2023)