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EDUCATION

University of Isfahan

B.Sc. in Computer Engineering; Overall GPA: 18.26/20.00 (3.82/4)

Isfahan, Iran

2019-Present

Last two years' GPA: 19.27/20.00 (3.9/4)

3rd highest GPA among 100 B.Sc. Computer Engineering students (class of 2023)

Related Courses:

- Artificial Intelligence and Expert Systems (20/20)
- Fundamentals of Computational Intelligence (20/20)
- Human-Computer Interaction (19.92/20)
- Fundamentals of Data Mining (20/20)
- Fundamentals of Information Retrieval and Web Search (19.25/20)
- Data Structures (20/20)
- Discrete Mathematics (19.5/20)
- Principles of Compiler Design (20/20)
- Theory of Formal Languages and Automata (18.5/20)
- Computer Networks (19.2/20)

University of Isfahan

Minor in Mathematics

Isfahan, Iran

2021-Present

Related Courses:

- Graph Theory
- Fundamentals of Matrices and Linear Algebra
- Fundamentals of Combinatorics
- Fundamentals of Mathematical Analysis
- Probability I
- Linear Optimization
- Fundamentals of Mathematical Sciences

Farzanegan High School

High School Diploma of Mathematics and Physics; Overall GPA: 19.81/20.00

Isfahan, Iran

2016-2019

Affiliated with the National Organization for the Development of Exceptional Talents (NODET)

RESEARCH INTERESTS

- Machine Learning
- Generative Models
- Computer Vision
- Medical Image Analysis
- Deep Learning
- Computer Graphics

PROFESSIONAL EXPERIENCE

IPM Institute For Research in Fundamental Sciences

Internship

Tehran, Iran

June 2023-September 2023

- Developed an intelligent agent for the game *Soccer Stars* to compete with human players
- Key focus on computer vision, evolutionary algorithms, and physics simulation
- Utilized computer vision techniques for accurate perception and interpretation of game visuals
- Integrated a custom-trained YOLOv5 model for object detection
- Employed evolutionary algorithms for strategic decision-making and action execution
- Implemented physics simulation to replicate and calculate in-game physics interactions
- Optimized physics parameters via genetic algorithms for accurate in-game simulation

Ahan Online

Junior Frontend Developer

Tehran, Iran

August 2021-March 2022

- Developed high-performance, reusable components using React, TypeScript, and Next.js with a special focus on code readability and maintainability
- Successfully transformed over 50% of the codebase into React components across multiple projects
- Collaborated with a diverse cross-functional team of 20 members, including backend developers, UI/UX designers, and product owners, to implement new features and systems within an agile environment
- Addressed and resolved 50+ issues and high-priority functional bugs based on QA analysis using Jira

Mehregan Workshop

Volunteer Developer and Instructor

Isfahan, Iran

September 2020-May 2021

- Contributed to the development of the *Interkarsolar* website as a frontend developer, utilizing React and Material-UI
- Designed and implemented JavaScript-based algorithmic games for educational purposes
- Instructed a junior-level Game Theory course in Spring 2021

SELECTED COURSE PROJECTS

Game-Playing Intelligent Agent with Reinforcement Learning: Implemented reinforcement learning algorithms, including Value-Iteration and Q-Learning, for a 2D grid world Markov Decision Process resembling a Pac-Man game. Also applied the Mini-Max algorithm and common path-planning techniques such as A*, Dijkstra, and bidirectional search.

Comparison of MLP and RBF as Classifiers on CIFAR-10: Implemented Multilayer Perceptron (MLP) and Radial Basis Function (RBF) neural networks from scratch in Python and used ResNet-34 as a feature extractor. Evaluated and compared the classification accuracy of the two networks on the CIFAR-10 dataset.

Neural Architecture Search for CIFAR-10 Image Classification Using Evolutionary Algorithms: Applied evolutionary algorithms to automate deep neural network design for image classification. The network architecture was optimized by selecting the best feature extractor, number of hidden layers, number of neurons, and activation function from a predefined search space.

Wireless Sensor Network Optimization Using Evolutionary Algorithms: Implemented an evolutionary algorithm to optimize the cost and service quality of a city-wide communication network by adjusting the number, location, and transmit power of sensor nodes.

Clustering of Image Feature Vectors Using Self-Organizing Map: Applied a self-organizing map network to cluster feature vectors extracted from ResNet-34 on the CIFAR-10 dataset. Explored different network configurations, such as one-dimensional and two-dimensional topologies and neighborhood radius, to analyze the clustering results.

Travel Insurance Prediction Model: Developed a predictive model to forecast travel insurance subscriptions using MLP Classifier and Logistic Regression after data analysis and preprocessing in Python.

Behavioral Data Clustering and Gender Correlation Analysis: Clustered behavioral data into two groups, regardless of gender, and evaluated cluster consistency with gender division using silhouette and Davies-Bouldin scores.

Applicant Project Score Prediction Based on Technical Test Results: Developed a model to predict project scores based on technical aptitude test results. Cleaned and normalized the data, then applied regression analysis to forecast grades.

Persian News Article Text Classification Using Pre-trained BERT Model: Developed a text classification model to categorize Persian news articles into seven topics by fine-tuning the Hugging Face pre-trained models.

Jobonja - A Dynamic Job Portal Website: Developed a Next.js-powered website that connects job seekers and employers, implementing design patterns, unit tests, CI/CD, and frontend optimization techniques for enhanced performance as part of the Object-Oriented Design course project.

Heifes - E-commerce Platform Development: Developed *Heifes*, a Next.js-based e-commerce platform, connecting users with stores having surplus unsold food. Implemented with Scrum, detailed UML diagrams, 60% test coverage via Jest, and Cypress integration tests.

TEACHING EXPERIENCE

Teaching Assistant

Computer Architecture, Dr. Zohre Beiki

University of Isfahan

Fall 2022

Teaching Assistant

Data Structures, Dr. Reza Ramezani

University of Isfahan

Fall 2021

- Designed the course project for the practical application of study materials

Teaching Assistant

Advanced Programming, Dr. Ahmadreza Montazerolghaem

University of Isfahan

Spring 2021

- Designed the course project for the practical application of study materials
- Facilitated weekly mentoring sessions for students' course projects

Teaching Assistant

Fundamentals of Computer and Programming, Dr. Hossein Mahvash

University of Isfahan

Fall 2020

- Developed and graded homework assignments

Instructor

Game Theory

Mehregan Workshop

Spring 2021

- Instructed a junior-level course on Game Theory

SKILLS

Natural Languages: Farsi (Native), English (Fluent)

Programming Languages: Python, C++, JavaScript, and TypeScript

Machine Learning: Familiar with PyTorch, TensorFlow, Keras, Scikit-Learn, OpenCV, Pandas, NumPy, Matplotlib, and fundamental topics such as classification, clustering, reinforcement learning, and neural networks

Software Engineering: Familiar with software design patterns, SOLID design principles, and software development methodologies such as Agile

Web Development: React, Next.js, JavaScript, TypeScript, HTML, CSS, Redux, Jest, Cypress, Mongoose, Tailwind, Bootstrap, Material-UI, Ant Design

Others: SQL, MongoDB, Git, Jupyter, Scrum, Algorithms, Data Structures, Object-Oriented Programming

TEST SCORES

TOEFL iBT: R: 29, L: 28, S: 25, W: 24, Overall: 106

ACADEMIC REFERENCES

Hossein Karshenas

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