Mahyar Riazati

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Education

Tehran University — Tehran, Iran
M.Sc. in Electrical Engineering - Telecommunication Systems; ***GPA: 3.5/4.00*** — *Sep 2022 – 2025*
Thesis: Under the supervision of Dr.Majid Nili Ahmad Abadi

Islamic Azad University - South Tehran Branch — Tehran, Iran
B.Sc. in Electrical and Telecommunication Engineering; ***GPA: 3.103/4.00*** — *Sep 2017 – Jan 2022*
Undergrad Project: Face Landmark Detection for Android Devices Under the supervision of Dr.Sedigheh Ghofrani

Skills

AI: scikit-learn, numpy, pandas, PyTorch, OpenCV, Image Processing, Fuzzy Logic, Reinforcement Learning
EE: Altium Designer, Arduino, AVR, ESP32, MATLAB, Simulink, DSP
SE: FP, OOP, TDD, C/C++, Python, Java, Android
DB: PostgreSQL, MySQL, MongoDB, MinioDB
Tools: git, GNUMake, CMake, Docker, Unity
Back-End: Flask, Django + DRF, Node.JS, express, php
Front-End: HTML, CSS, SCSS, JS, TS, React/Next, Cypress, React Testing Library

Work Experience

Quera — Tehran, Iran
Bootcamp Mentor and Instructor — *Jul 2022 – Nov 2022, Full-time*
- Assisted in planning, course component selection, and problem design for data science Bootcamp.
- Instructor of Numpy, Pandas, SQL, Fundamental Concepts of Supervised and Unsupervised Learning and Artificial Neural Networks.
- Responsible for Planning, course component selection, and problem design for a front-end development Bootcamp.
- Taught WebAPIs, WebSockets, and React Router.

Front-End College Section Chief — *Dec 2021 – Nov 2022, Full-Time*
- Maintained Two major courses on front-end development & React.js with more than 3000 participants.
- Revised technical contents of the course and the problems given to the participants based on the up-to-date needs of the tech industry, resulting in a 50% increase in the NPS score of the front-end college.

Programming Contest Designer — *Sep 2021 – Nov 2022, Full-Time*
- Responsible for planning and designing a programming recruitment contest on React.js for Mofid Securities for more than 1500 participants.
- Advisor and technical assistant of DigiKala programming contests.
- Developed an online judgment system for mobile app developments with React Native.

Research Experience

Cognitive Systems Lab at Tehran University — Tehran, Iran
Research Assistant/Software Engineer — *May 2023 – Present, Full-time*
- Translated research requirements and user needs in the education sector into actionable, technically viable solutions.
- Designed and implemented a comprehensive Learning Management System (LMS) with an integrated ChatGPT interface, utilizing React, Django, PostgreSQL, TypeScript, and WebSockets for real-time communication.
- Developed and deployed a custom Discord bot using Discord.js, TypeScript, and MongoDB to streamline the organization and management of course groups within Discord communities.
- Oversaw the deployment and maintenance of applications on Platform-as-a-Service (PaaS) environments, leveraging Docker for containerization and efficient management.

- Architected a microservices-based infrastructure to seamlessly orchestrate various application components, enhancing scalability and maintainability.
- Engineered an unsupervised machine learning algorithm to intelligently group students based on data, leading to diverse group compositions and a notable 60% increase in user-reported satisfaction.
- Spearheaded the development of a user-centric web application for an AI camp targeting underprivileged students, aimed at fostering engagement and excitement by facilitating interaction with Generative AI models.

Artificial Creatures Lab at Sharif University of Technology Tehran, Iran

Research Assistant *Mar 2022 – Present, Part-time*

- Collaborated within a dynamic research team led by Dr.Saeed Bagheri Shouraki to develop innovative algorithms aimed at expediting and enhancing the stability of training processes. Transformed the initial goal of finding a method into developing a sophisticated algorithm for transferring learned insights from one problem to another. Leveraged sidechannels data from expert agents to optimize and augment the efficiency of knowledge transfer mechanisms.
- Organized the code written by the research group members and the results of experiments into a repository.
- Developed various modules for Reinforcement Learning applications such as DQN to make the codebase more uniform and reliable.
- Discovered a new method inspired by Ink Drop Spread (IDS) from fuzzy logic that led to a 50 percent optimization in the training process and increased the stability of the Q-Learning process.
- Developed a customizable environment with Unity Engine and MLAgents.
- Developed a pipeline with a simple and user-friendly interface to run the experiments faster and easier. (GitHub)

Publications

- A. Ghandi, S. B. Shouraki, I. Gholampour, A. Kamranian, and **M. Riazati**, "Ex-RL: Experience-based reinforcement learning," *Information Sciences*, vol. 689, p. 121479, 2025, doi: 10.1016/j.ins.2024.121479.
- A. Ghandi, S. B. Shouraki and **M. Riazati**, "Deep ExRL: Experience-Driven Deep Reinforcement Learning in Control Problems," *2024 12th Iran Workshop on Communication and Information Theory (IWCIT)*, Tehran, Iran, Islamic Republic of, 2024, pp. 1-6, doi: 10.1109/IWCIT62550.2024.10552959.

Projects

DLIB Android Face Landmark Detection | *GitHub*

- Spearheaded my final undergraduate project under the guidance of Dr. Sedigheh Ghofrani, dedicated to implementing face landmark detection on Android devices.
- Leveraged Java to craft the user interface and implement critical functionalities.
- Employed the OpenCV Java Library for proficient image processing and editing.
- Seamlessly integrated the dlib library, crafted in C++, by harnessing the NDK within the Java framework. Utilized C++ and CMake to enable 68-point face landmark detection on Android devices.

Simple Multi Agent Deep Reinforcement Learning Chess | *GitHub*

- Developed a chess environment using Pygame for a fun holiday project.
- Applied the Proximal Policy Optimization (PPO) algorithm to solve the chess environment, excluding en passant and castling moves.
- Trained two agents with separate neural networks, engaging in self-play to enhance their gameplay.
- Trained a single agent with a singular neural network, capable of playing both white and black pieces through joint training.

Koch Snowflake | *GitHub* | *Website*

- Developed an interactive web application using React and TypeScript for generating Koch snowflakes, a visually intricate fractal pattern.
- Implemented a dynamic user interface allowing real-time adjustments to parameters such as iteration levels and line lengths, providing an engaging user experience.
- Translated the recursive Koch snowflake algorithm into efficient TypeScript code, striking a balance between performance and readability.

Elementary Cellular Automaton | *GitHub* | *Website*

- A React.js Project enabling the generation of Elementary Cellular Automataton with various rules and sizes.

Unity MountainCar 2D | *GitHub*

- Developed Unity Mountain Car 2D as part of my research assistant role in Artificial Creature Labs.
- Crafting a 2D version of the Mountain Car problem within the Unity framework.
- Utilizing Unity ML-Agents Toolkit to enable reinforcement learning in the 2D environment.
- Providing flexibility by allowing adjustments to the position of the goal, adding height offsets, changing gravity, and fine-tuning car properties such as mass and force.

PrecoderNet | *GitHub*

- Implemented "PrecoderNet: Hybrid Beamforming for Millimeter Wave Systems with Deep Reinforcement Learning" paper using a DDPG model.

ALOHASIM | *GitHub*

- Conducted a comprehensive simulation of the ALOHA Protocol as a key component of a Telecommunication Undergraduate course project.
- Implemented a dynamic visualization of node interactions using the pygame framework, providing a clear and engaging representation of the protocol's functioning.

Relevant Coursework

M.Sc. coursework: Stochastic Processes, Advance Digital Signal Processing, Convex Optimization, Machine Learning, Reinforcement Learning, Foundational Models in NLP, Advance Telecommunication Theory

B.Sc. coursework: Electrical Circuits I-II, Probability Theory, Electronics I-II, Signals and Systems, Digital System Design I-II, Electromagnetic, Fields & Waves, Microwave, Antenna, Linear Control, Principals of Communication Systems, Digital Signal Processing, Digital Communications, Telecommunication Networks

Certificates

Reinforcement Learning Specialization *Jun 2021*
Coursera – University of Alberta

Generative Adversarial Networks Specialization *Jun 2021*
Coursera – DeepLearning.ai

Mathematics for Machine Learning: Linear Algebra *Apr 2021*
Coursera – Imperial College London

Deep Learning Specialization *Mar 2021*
Coursera – DeepLearning.ai

Proffessional Project-Oriented Course in Backend Development with Django *Oct 2020*
Quera

Advance Algorithmic Thinking and Data structure *Oct 2020*
Quera

Project-Oriented Course in Web Development with PHP *May 2020*
Quera

Advance Python Programming and Object-Oriented Thinking Course *May 2020*
Quera

References

References available upon request.