Mohammadjavad Ahmadpour

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Education

Computer Engineering — ***Bachelor*** Sep 2021 - now
Faculty of Computer Engineering GPA: 19.64
Sharif University of Technology, Iran, Tehran Rank: 9 out of 117

Research Experience

Multi-hop RAG system — ***Dr. Ali Diba and Dr. Siavash Ahmadi*** July 2025 - now

- Gained hands-on experience with python libraries related to Large Language Models and retrieval systems in developing a RAG system for QA answering.
- Learning how to effectively prompt both open-source and closed-source LLMs such as GPT-4o and Qwen3, as well as how to use the BM25 engine for retrieving relevant documents.

Reasoning in Vision Language Models — ***Prof. Mahdieh Soleymani*** May 2025 - now

- Conducting research on Reasoning in Vision-Language Models (VLMs) under the supervision of Prof. Soleymani, focusing on improving reasoning ability through inference-time methods.
- Gained experience in multimodal reasoning, prompt optimization, and evaluation of large VLMs, learning how inference-time interventions can enhance factual consistency and visual understanding.

RL in Diffusion Models — ***Prof. Sajad Amini*** September 2025 - now

- Conducting research on Reinforcement Learning in Diffusion Models under the supervision of Prof. Amini, exploring how RL can improve sample efficiency, generation quality, and consistency training in generative models.
- Gained hands-on experience in diffusion and consistency models, reward design, and policy optimization, learning how to integrate reinforcement signals into generative training pipelines for controllable image synthesis.

Work Experience

Back-end Developer — ***Intern at Soha IT*** Jun 2024 - September 2024

- Gained hands-on experience with **Java**, **Kotlin**, **Spring Boot**, **Oracle DB**, **Redis**, **Elasticsearch**, **Kafka**, and Docker in developing and maintaining backend systems for a large-scale tax management project.
- Focused on improving system reliability and performance through backend optimizations and infrastructure enhancements:
  + Implemented a **dead letter queue** mechanism to handle message failures gracefully and prevent data loss in asynchronous event processing
  + Integrated **Redis** to cache frequently accessed data and reduce database load, resulting in faster response times and improved scalability.
  + Designed structured logging pipelines to store and query application logs efficiently through **Elastic Stack**, enabling faster issue diagnosis and system monitoring

Teaching Assistant

Deep Learning — ***Prof. Mahdieh Soleymani*** February 2025 - June 2025

- Designed a **notebook** (practical homework) to teach students how to build and train VAE on MNIST and then use it for various tasks other than generation itself.

Stochastic Processes — ***Prof. Amir Najafi*** February 2025 - June 2025

- Designed a **notebook** (practical homework) to teach different sampling methods such as rejection sampling, thinning, Ogata sampling, and MCMC methods to students.
- Designed several theory questions for different topics such as Gaussian process, Sufficient Statistics, and Hidden Markov Models.

Linear Algebra — ***Dr. Maryam Ramezani*** October 2024 - January 2025

- Served as **Head Teaching Assistant** for the Linear Algebra course, managing and coordinating a large team of undergraduate and graduate TAs. Oversaw the quality assurance of homework and exams, and actively supported student learning through Q&A sessions and ongoing communication.

Sharif University of Technology — ***Teaching Assistant*** 2022–2025 -

- Repeatedly served as Teaching Assistant for core undergraduate courses such as **Machine Learning**, **Artificial Intelligence**, and **Linear Algebra**, contributing to teaching material development, evaluation, and student mentoring.

Projects

Personal Project — ***Machine Learning*** October 2022 - now

- Implemented a **jupyter notebook** to predict S&P500 future prices using Different methods such as fitting an HMM.
- Developed a dynamic **movie retrieval system** that allows users to search movies by title, summaries, cast, directors, and genres, providing quick and relevant results based on entered keywords.
- Implemented multiple deep generative models based on research papers, available on **Github**. The repository showcases a variety of algorithms and architectures for various applications.
- Implemented multiple deep Reinforcement Learning algorithms based on research papers, available on **Github**. The repository showcases a variety of algorithms and architectures for various applications.

Personal Projects — ***Software Engineer*** Sep 2021 - October 2022

- Developed a **simple Cuphead-inspired game** in **Java**, utilizing object-oriented principles to manage character behaviors, interactions, and game mechanics.
- Implemented a **State.io game** in **C**, incorporating additional features to enhance gameplay and functionality.
- Implemented a **dictionary app and a Chrome extension** in **Python and JS**, allowing you to add words to your dictionary by right clicking on them in your browser and then download your words to use them in dictionary app.

Selected Courses

- Deep Reinforcement Learning
- Stochastic Processes
- Signal and Systems
- Deep Generative Models
- Advanced Information Retrieval
- High-dimensional Statistics

Achievements

- Mathematics and Physics University Entrance Exam — Rank: 7 among 130,000 participants
- Test of English as a Foreign Language (TOEFL iBT) — August 2025 – 108/120