Mohammadjavad Ahmadpour

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Education

Computer Engineering — *Bachelor* Sep 2021 - now
Faculty of Computer Engineering GPA: 19.66
Sharif University of Technology, Iran, Tehran Rank: 8 out of 117

Research Experience

Object Goal Navigation — *Prof. Sajjad Amini* July 2025 - now

- Gained hands-on experience with segmentation models (e.g., Semantic SAM) and simulation environments (e.g., Habitat) for robotic navigation.
- Investigated zero-shot methods using vision-language models (e.g., CLIP) to guide robotic agents via semantic correlation.

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

- 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.
- This project is completed with the title: "Limits and Gains of Test-Time Scaling in Vision-Language Reasoning".

RL in Diffusion Models — *Prof. Sajjad 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 banking 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 probabilistic methods.
- 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.
- Implemented an **LLM Agent** in **Python**, allowing you to ask different technical questions about a survey dataset.

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. Dictionary is enriched using Deepseek API.

Selected Courses

- Deep Reinforcement Learning
- Stochastic Processes
- Algorithmic Game Theory
- Deep Generative Models
- Advanced Information Retrieval
- High-dimensional Statistics

Achievements

- Mathematics and Physics University Entrance Exam — National rank 7 among 140,000 participants
- Test of English as a Foreign Language (TOEFL iBT) — August 2025 – 108/120