Amir Mohammad Fakhimi

(+98) 913 163 6804 fakhimi.amirmohamad@gmail.com amir-mohammad-fakhimi
AmirMohammadFakhimi amirmohammadfakhimi www.amfakhimi.com Tehran, Iran

Education

- **Sharif University of Technology** Tehran, Iran
  B.Sc. in Computer Engineering *September 2020 – February 2025*
  - **GPA:** 18.72 / 20
  - **Courses (Grades out of 20):**
    - Natural Language Processing (Graduate Course) - 19.8
    - Fundamentals of 3D Computer Vision - 18.7
    - Modern Information Retrieval - 20
    - Machine Learning - 19.6
    - Artificial Intelligence - 19.6
    - Linear Algebra - 20
    - Engineering Probability and Statistics - 20
    - Advanced Programming - 20
    - Fundamentals of Programming - 20
  - **Teaching Assistants:**
    - Natural Language Processing (Graduate Course)
    - Generative Models (Graduate Course)
    - Machine Learning (4 Semesters)
    - Modern Information Retrieval (3 Semesters)
    - Artificial Intelligence (3 Semesters)
    - Linear Algebra
    - Engineering Probability and Statistics
    - Database Design (5 Semesters, 3 as Head TA)
    - Mobile Programming (Head of iOS Homework)
    - Web Programming
    - Software Testing
    - Advanced Programming (3 Semesters, 2 as Head of a Homework)
    - Fundamentals of Programming (3 Semesters, 1 as Head of a Homework)
    - Theory of Machines and Languages
    - Computer Simulation
    - Computer Networks
    - Computer Structure and Machine Language

Research Interests

- Natural Language Processing (LLMs)
- Computer Vision
- Deep Learning
- Machine Learning

Research Experiences

- **Number Understanding in LLMs** Qatar Computing Research Institute
  Supervisor: Dr. Ehsaneddin Asgari (QCRI) *April 2025 – Present*
  - Built a multilingual benchmark for LLM numeric reasoning across **4 domains** (Basic, Numeric, Temporal, Monetary) and **4 languages** (English, Persian, Arabic, Turkish).
  - Generated **1M multiple-choice prompts per language** using a templated pipeline with controlled numeric formatting and distractor construction.
  - Implemented an evaluation harness and ran experiments on open-source LLMs (Gemma, Llama, Qwen).
  - Designed the pipeline to be language-agnostic via templates, enabling straightforward extension to new languages.
- **AI-Driven Referee Recommendation System for Scientia Iranica Journal** Sharif University of Technology
  Supervisor: Dr. Shohreh Kasaei (IP Lab) *February 2024 – Present*
  - Contributing to an AI project for Scientia Iranica, a journal of Sharif University of Technology.
  - Developing an AI model to **automate referee selection** for submitted articles, streamlining the peer-review process.

- Designed an AI-based system to identify professors' expertise based on their published papers.

- **Abductive Reasoning in LLMs** — Sharif University of Technology
  Supervisors: Dr. Mohammad Hossein Rohban (RIML Lab) and Dr. Mahdi Jafari Siavoshani (INL Lab) — *May 2025 – August 2025*
  - Conducted a structured literature review on abductive reasoning, from formal foundations to LLM-based methods, reviewed **50** papers.
  - Identified and cataloged **30** abductive-reasoning datasets from the literature across **commonsense, medical, and investigative** domains and documented strengths, limitations, and evaluation gaps in a searchable spreadsheet.
  - Ran **70** model-dataset evaluations on abductive benchmarks using LLMs (e.g., Llama, GPT), and summarized key failure patterns.

- **Research Survey on Compositional Problems of Stable Diffusion Models** — Sharif University of Technology
  Supervisors: Dr. Mahdieh Soleymani Baghshah (ML Lab) and Dr. Mohammad Hossein Rohban (RIML Lab) — *October 2023 – April 2024*
  - Conducted a research survey on methods addressing compositional challenges in diffusion models (e.g., object relationships, positional consistency, and scale).
  - Taxonomized prior work into categories based on core failure modes and solution strategies through an extensive literature review.
  - Created visual summaries (taxonomy diagrams and comparison charts) to clarify trade-offs and highlight gaps.

Work Experiences

- **Artificial Intelligence Intern** — Sokhan AI
  Internship — *June 2024 – September 2024*
  - Focused on Automatic Speech Recognition (ASR) systems, specializing in fine-tuning **Whisper model** with public and proprietary Persian datasets.
  - Achieved an approximately **10% reduction in Word Error Rate (WER)**, outperforming both the company's previous ASR system and fine-tuned open-source versions of Whisper.
  - Contributed a bug-fix **pull request to Hugging Face's Transformers library**, which was merged, resolving an issue encountered during Whisper model fine-tuning that was consistent with similar reported issues.
  - After the internship, continued volunteering to finalize the ASR evaluation pipeline, benchmarks, and documentation, and delivered a reproducible training and evaluation setup.

- **Software Development Intern** — Rahnema College
  Internship — *August 2022 – November 2022*
  - Selected from nearly **900 participants** for this Tapsi-sponsored boot camp.
  - Gained experience in **Front-End** (TypeScript, React.js), **Back-End** (Node.js), **Android Development** (Kotlin), and **DevOps** (Kubernetes, Docker).
  - Worked as part of the front-end team on the FPL project alongside five other team members.

Highlighted Projects

- **LLMs' Citation Benchmark** — July 2024 – August 2024
  Sharif University of Technology
  - Final project for the Natural Language Processing course.
  - Built a system to **evaluate citation accuracy** in LLMs.

- Experimented with multiple **prompt designs** to improve citation precision.
- Used metrics to assess citation reliability.

- **Validation for Maximum Sequence Length in Whisper Model of Hugging Face's Transformers Library** August 2024 – September 2024
  Sokhan AI
  - Introduced a validation check for the Whisper model in Hugging Face's Transformers library to ensure label sequence length does not exceed maximum token length.
  - Resolved an issue encountered during Whisper model fine-tuning that was consistent with similar reported issues.
  - Enhanced model robustness and maintained consistent input dimensions.
  - Implemented tests to verify the validation mechanism.

- **Modern Information Retrieval** February 2022 – August 2023
  Sharif University of Technology
  - Comprehensive project for Modern Information Retrieval at Sharif University of Technology, completed in three phases.
  - **Phase 1:** Implemented retrieval algorithms (Vector Spaces, Okapi BM25) and data compression, then evaluated them.
  - **Phase 2:** Added classification methods (e.g., neural networks, language models) and enhanced the search engine with evaluations.
  - **Phase 3:** Developed a web crawler for semanticscholar.org, implemented personalized PageRank, author ranking, a recommender system, and designed a user interface for the search engine named **Amoogle**.

- **Llama 3 LoRA Fine-Tuning** July 2024 - August 2024
  Sharif University of Technology
  - Completed as the final homework for the Natural Language Processing course.
  - Created a dataset focused on gender-neutralization.
  - Performed **LoRA** fine-tuning on **Llama 3** with the gender-neutral dataset.

Honors and Awards

- **Direct Master's Program Candidate** in Artificial Intelligence, Sharif University of Technology – *Highly competitive program for top-performing students* (2023)
- **Selected Athlete**, Sharif University of Technology Table Tennis Team, 16th National Students' Sports Olympiad (2024)
- **Second Place** in Sharif University of Technology Table Tennis Championship (2025)
- **Third Place** in Sharif University of Technology Table Tennis Championship (2025)

Volunteering Experiences

- **Instructor (NLP Team) for IOAI Preparation Program**
  - Designed and delivered **5 NLP sessions** (highest within the NLP team) to **roughly 70 students per session**.
  - Produced both theory and notebook-based hands-on materials on word embeddings, RNNs, LSTMs, and GRUs on **two days' notice**.
  - Collected structured feedback after each session, and the responses consistently praised the **clarity** and **practical usefulness** of the instruction.

- **Introduction to Programming and Algorithms: A Collaborative High School Outreach Course**
  - Developed in collaboration with **Sharif University of Technology** and **Quera** to introduce high school students to programming and algorithms.

- Engaged around **2000 students**, supported by a team of approximately **100 teaching staff**.
- Contributed by writing textbooks, creating practical exercises, and mentoring a student group to enhance their learning.
- Recognized as **one of the top mentors** for dedication and impactful contributions to student learning.

- **Events at Sharif University of Technology:**
  - **Scientific Staff** - Rayan AI Global Contest (2024): Focused on Anomaly Detection.
  - **Technical Staff** - Gamein (2024): Front-End Web Developer.
  - **Technical Staff** - She'r ta Code (2024): Front-End Web Developer.
  - **Technical Staff** - ICPC Asian Regional, Tehran Site (2024, 2023, 2022): Supported technical operations.
  - **Technical Staff** - Winter Seminar Series (WSS) (2023): Front-End Web Developer.
  - **Technical Staff** - CodoCodile (2023): Front-End Web Developer.
  - **Media Staff** - League of Coders (LoC) (2022): Managed media coverage.
  - **Executive Staff** - HardWar (2022): Supported event execution.
  - **Branding Staff** - SharifGame (2021): Assisted in branding initiatives.
  - **Presenter** - Linux & Computer Workshops, Saboo (2021): Led workshop presentations.

Other Courses

- Advanced Concepts in AI: System 2 AI – Sharif University of Technology *Audited Graduate Course, Sp 2025*
- Deep Learning for Computer Vision – Stanford University *Self-study*

Technical Skills

- **Programming Languages:** Python, TypeScript, JavaScript, Java, Swift, R, C, SQL, Verilog
- **Python Libraries for AI and Data Science:** PyTorch, TensorFlow, Hugging Face Libraries (Transformers, Datasets, PEFT, Evaluate), OpenCV, scikit-learn, NLTK, NumPy, Pandas, Matplotlib, Plotly
- **Web Technologies:**
  - **Front-End:** Next.js, React.js
  - **Back-End:** Node.js, FastAPI, PostgreSQL, Redis