

# Amir Mohammad Fakhimi

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## Education

### • [Sharif University of Technology](#)

Tehran, Iran

*B.Sc. in Computer Engineering*

*September 2020 – September 2025*

◦ **GPA:** 18.72 / 20

◦ **Courses (Grades out of 20):**

\* Natural Language Processing (Graduate Course) - 19.8

\* Artificial Intelligence - 19.6

\* Fundamentals of 3D Computer Vision - 18.7

\* Linear Algebra - 20

\* Modern Information Retrieval - 20

\* Engineering Probability and Statistics - 20

\* Machine Learning - 19.6

\* Advanced Programming - 20

\* Fundamentals of Programming - 20

◦ **Teaching Assistants:**

\* Natural Language Processing (Graduate Course)

\* Web Programming

\* Generative Models (Graduate Course)

\* Software Testing

\* Machine Learning (4 Semesters)

\* Advanced Programming (3 Semesters, 2 as Head of a Homework)

\* Modern Information Retrieval (3 Semesters)

\* Fundamentals of Programming (3 Semesters, 1 as Head of a Homework)

\* Artificial Intelligence (3 Semesters)

\* Theory of Machines and Languages

\* Linear Algebra

\* Engineering Probability and Statistics

\* Computer Simulation

\* Database Design (5 Semesters, 3 as Head TA)

\* Computer Networks

\* Mobile Programming (Head of iOS Homework)

\* Computer Structure and Machine Language

## Research Interests

• LLM/VLM Reasoning    • Multimodal Learning    • Multilingual Robustness    • Grounding & Evaluation

## Research Experience

### • **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 almost **1.2M 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 (e.g., 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.

## Industry Experience

- **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.

## Honors and Awards

- **Direct Master's Program Candidate** in Artificial Intelligence, Sharif University of Technology – *Highly competitive program; selected as one of 18 finalists* (2023)
- **Selected Athlete**, Sharif University of Technology Table Tennis Team – *Represented Sharif University of Technology at the 16th National Students' Sports Olympiad* (2024)

- **Second Place**, Sharif University of Technology Table Tennis Championship – *2nd out of 47 participants* (2025)
- **Third Place**, Sharif University of Technology Table Tennis Championship – *3rd out of 32 participants* (2025)

## Selected Projects

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- [LLMs' Citation Benchmark](#) July 2024 – August 2024  
[Sharif University of Technology](#)
  - Built an evaluation pipeline for citation-grounded LLM answers (generation → evidence → scoring).
  - **Implemented a new citation-validity metric** by decomposing responses into atomic facts and verifying support against the cited sources. Aggregated scores with a decaying weighting scheme.
  - Implemented automatic evaluation metrics including ROUGE-Lsum and NLI-style support checks.
  - Ran experiments across prompt variants and retrieval baselines to improve citation faithfulness and benchmark 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.
- [Llama 3 LoRA Fine-Tuning](#) July 2024 – August 2024  
[Sharif University of Technology](#)
  - Created a [dataset](#) focused on gender-neutralization.
  - Performed **LoRA** fine-tuning on **Llama 3** with the gender-neutral dataset.
- [Modern Information Retrieval](#) February 2022 – August 2023  
[Sharif University of Technology](#)
  - Comprehensive project for Modern Information Retrieval course, 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**.

## Volunteering Experiences

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- **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

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- [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

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- **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