

# Fatemeh Shahrokhshahi

email: [ftm.shahrokhshahi@gmail.com](mailto:ftm.shahrokhshahi@gmail.com) • linkedin: [fateme shahrokhshahi](#) • github: [fatemeshahrokhshahi](#) • [googlescholar](#)

## RESEARCH INTERESTS

Developing computational methods to improve reasoning and reliability in large language models, with a focus on failure prediction, structured inference, and prompt-based intervention strategies.

## EDUCATION

**Master of Computer Engineering** *Istanbul Aydin University, Istanbul, Turkey* | GPA: 4.0/4.0 Sep 2024 - Present

**Bachelor of Robotic Engineering** *Shahrood University of Technology, Shahrood, Iran* | GPA: 2.62/4.0 Sep 2015 - Feb 2022

## PUBLICATIONS

**LogiCue: Targeted Prompting for Improved Modal and Conditional Reasoning in LLMs** | Dec 2025

*Procedia Computer Science, Elsevier* | *ACLing 2025* | *Published*

- Pattern-specific prompting framework for seven modal inference patterns, evaluated across nine models with statistical validation ( $p < 0.01$ )

**Can We Predict LLM Reasoning Failures? Structural Predictability of Modal and Conditional Inference Errors** | Aug 2026

*KI 2026: 49th German Conference on Artificial Intelligence* | *Published, Bremen, Germany*

- Trained classifiers to predict per-instance LLM failures from input-side structural features (3,776 instances, nine models, three prompting strategies; AUC-ROC 0.69–0.93); showed targeted prompting and output-side reliability mechanisms are complementary

**Towards Logical Reasoning by Design: Encoding Inference Rules in MeMo's Associative Memory** | Jun 2026

*MeMo Workshop on Mechanistic Interpretability & Neuro-symbolic Approaches, University of Rome Tor Vergata* | *Accepted*

- Explored explicit rule storage in MeMo's Correlation Matrix Memory.

## RESEARCH EXPERIENCE

**Intelligent Academic Retrieval System (RAG)** | Nov 2024 – Feb 2025

- Built RAG pipeline over 512 Springer papers using LangChain and ChromaDB; embedding-based retrieval outperformed keyword search; GitHub

**Balanced K-Means for Domain Discovery in Language Models** | Feb – May 2025

- Balanced K-means clustering preventing general-domain dominance on C4 dataset

**Earthquake Prediction Using Machine Learning (*Under Preparation*)** | Jul 2025

- Ensemble of Random Forest, PINNs, and GNNs on AFAD data; 76.9% accuracy / 82.0% AUC; 90-day horizon with risk assessment module

**Child Mental State Analysis via Drawing Behaviour** | *Android Developer* 2019 – 2021

- Android app capturing stroke coordinates and symbol sequences; output structured drawing features to a clinical analysis system used by therapists

## TECHNICAL SKILLS

**Programming:** Python, C, Java, MATLAB, SQL, FastAPI

**Deep Learning Frameworks:** PyTorch, TensorFlow, Hugging Face Transformers, LangChain

**Machine Learning:** Representation Learning, Deep Learning, Bayesian Methods

**NLP/AI Specializations:** Large Language Models, Natural Language Processing, Knowledge Graph Embeddings

**Research Tools:** Git, Cloud Services (AWS/GCP), ChromaDB (Vector DB), Julep (Orchestration), Model Fine-tuning

**Additional:** Computer Vision (OpenCV), Statistical Analysis, Experimental Design

## CERTIFICATIONS & SERVICE

**IELTS Academic** | *TRF 22IR007446SHAF010A* Oct 2022

- Overall: 7.0 (L:8, R:7, S:7, W:6) | Persian (native), English (C1), French (A2), Turkish (basic)

**Academic Service** |

- PC Member, EITS 2026 (Emerging Trends in Information Systems)
- Presenter, ACLing 2025, AI in Computational Linguistics, British University in Dubai. Dec 2025