

# ERFAN SHAHABI

NLP, LLM Researcher

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## Research Interests

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Natural Language Processing, Large Language Models, Strategic Reasoning and Behavior of LLMs, Social Intelligence, Computational Social Science, Machine Behavior

## Education

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**M.Sc in Information Technology Engineering, GPA: 4.00/4.00 (18.15/20)**

Sep 2024 – Present  
Tehran, Iran

University of Tehran, School of ECE

- Supervisors: Dr. Azadeh Shakery, Dr. Yadollah Yaghoobzadeh
- Thesis: An Investigation and Enhancement of Strategic Behavior of Large Language Models in Social Context

**B.Sc in Industrial Engineering, GPA: 4.00/4.00 (18.07/20)**

Sep 2019 – Aug 2023  
Tehran, Iran

Islamic Azad University, Science and Research Branch

- Supervisor: Dr. Abbas Saghaei
- Thesis: Used Car Price Prediction Using Machine Learning Methods

## Publications

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- ProDAKD: A Profile-based Dialogue Agents Knowledge Distillation Approach for User Simulation in Conversational Recommender Systems**

Under Review at *ECIR 2026 Main Conference* 🔗

E Shahabi\*, A Roshandel\*, M Sadeghi, V Rahimzadeh, A Shakery (\*equal contribution)

## Professional Experiences

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### Researcher

Sep 2024 – Present  
ECE @ University of Tehran

Intelligent Information Systems Lab

- Supervisors: Dr. Azadeh Shakery, Dr. Yadollah Yaghoobzadeh
- Research Area: Strategic Behavior and Social Reasoning of LLMs

## Selected Projects

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- Fine-Tuning LLaMA-3.2 using ORPO and DPO for Human-Preference-Based Alignment 🔗
- Quantization-Aware Reasoning and Text-to-SQL Agent Design using ReAct and LangGraph 🔗
- ChatFood: Building a ReAct-based Conversational Food chatbot with LangGraph and Gemini 🔗
- Conversational Search with RAG: Dataset Construction and Multifaceted Evaluation 🔗
- Developing a RAG pipeline for oil and gas drilling chatbot for Binvest Co. 🔗
- Deep Learning for Sequence Labeling and Text Summarization with RNNs and Attention 🔗
- Sentiment Classification of IMDB Reviews using Text Preprocessing and Classical IR Techniques 🔗
- Relevance Classification using BERT for Query-Document Pairs in IR Tasks 🔗
- Semantic Clustering of StackOverflow Questions using Sentence Embeddings 🔗
- Forecasting Community Dynamics in Social Graphs using Multi-Task Graph Neural Networks 🔗

## Courses

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### Natural Language Processing

University of Tehran

Instructor: Dr. Hesham Faili

- Progressed from fundamental NLP concepts to advanced techniques
- Implemented a chatbot as final project using tool-use strategies
- Utilized APIs, Transformers, Hugging Face, Langchain, Langgraph, and agents

### Large Language Models

University of Tehran

Instructors: Dr. Yadollah Yaghoobzadeh, Dr. MJ Dousti

- Gained strong skills working with LLMs through multiple practical projects
- Worked extensively with APIs, Transformers, Hugging Face, and agent frameworks
- Developed use cases showcasing model integration and API utilization

### Intelligent Information Retrieval

University of Tehran

Instructor: Dr. Azadeh Shakery

- Started with ad-hoc retrieval methods and embeddings
- Worked with BERT models for improved retrieval performance
- Explored application of LLMs in retrieval-augmented generation (RAG)

### Advanced Data Mining

University of Tehran

Instructor: Dr. Azadeh Shakery

- Learned data fundamentals including cleaning and preprocessing
- Covered data cubes, classification, clustering, and deep learning applications
- Applied techniques in real-world datasets

### Social Networks

University of Tehran

Instructor: Dr. Masoud Asadpour

- Studied graph theory, centrality measures, and community detection
- Applied concepts to analyze real-world network data through projects

## Technical Skills

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- **Soft Skills:** Teamwork, Meeting Tight Deadlines
- **Programming Languages:** Python
- **Large Language Models:** Hugging Face, LangChain, LangGraph, LangFuse, Unsloth, PEFT, Datasets, TRL
- **Databases:** SQL, LanceDB
- **Machine Learning:** PyTorch, Scikit-Learn, Evaluate, TensorFlow
- **Retrieval:** Sentence Transformers, Lexical Retrieval, Semantic Retrieval, BM25

## Honors and Awards

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- Ranked 14 in Nationwide Graduate Level University Entrance Test of Information Technology Engineering

## Languages

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- **Persian:** Native
- **English:** Fluent