

Sorour Fatemi

+1 (708) 400 0856 | sorour.f@gmail.com | sorourf.github.io | linkedin.com/in/sorour-fatemi

US Permanent Resident | Highly skilled in Large Language Models, Prompt Engineering, Instruction Fine-tuning, Retrieval-Augmented Generation (RAG), Statistical Modeling, Machine Learning Models, Natural Language Processing, Deep Learning Models

Experience

Department of Information and Decision Sciences - University of Illinois at Chicago, Research

2021 - current

Assistant (Prof. Yuheng Hu)

Financial Sentiment Analysis and Stock Market Prediction

- Fine-tuned the **IDEFICS 2** multi-modal LLM to handle complex, Olympiad-level question-answering task, utilizing diverse datasets that included text and images.
- Conducted experiments to enhance LLMs' reasoning capabilities for hybrid (textual + tabular) financial QA using a **multi-agent** framework with a reflection agent, achieving a 15% performance improvement for the **LLaMA3-8b** model and a 5% improvement for the 3-70b model over single-agent reasoning
- **Instruct fine-tuned LLaMA3-8b, Mistral-7b, and Phi-3** models using the **QLoRA** method for various financial text classification tasks, achieving a significant 10% improvement in accuracy
- Conducted experiments on **zero-shot** and **few-shot** learning capabilities of LLMs (**Flan-T5, Mistral, Llama-3**, and **Phi-3**); enhanced performance by a minimum of 2% through the incorporation of a one-shot example in prompts.

Department of Information and Decision Sciences - University of Illinois at Chicago, Research

2020 - 2021

Assistant (Prof. Ali Tafti)

- Analyzed impact of Covid-19 pandemic on bike-sharing platforms using **Fixed-Effects Regression**; Identified a 22% increase in daily bike-sharing trips after the first Covid-19 case diagnosis

Department of Information and Decision Sciences - University of Illinois at Chicago, Teaching

2019 - 2023

Assistant

- Collaborated with the instructor and ran lab sessions for the Data Mining for Business, Advanced Database Management, Machine Learning Statistics, and Statistics for Management courses.

DMOND Accelerator in collaboration with Plug and Play Tech Center, Product Development

2014 - 2016

Specialist | Tehran, Iran

- Mentor startups in the program on taking product to market, raising money, scaling, and all other ad-hoc business needs.
- Conduct research to identify new markets and industry sectors, conducting in-depth business analysis to identifying new competitive opportunities.

Education

Ph.D. Candidate in Management Information Systems

2019 - 2024 (expected)

University of Illinois Chicago | Chicago, USA

- **Thesis Title:** Emergent Capabilities of LLMs in Finance

M.Sc., Industrial Engineering

2013 - 2016

University of Tehran | Tehran, Iran

B.Sc., Computer Engineering

2008 - 2012

Isfahan University of Technology | Isfahan, Iran

Publication

- **Fatemi, S.** and Hu, Y., "Instruction Fine-Tuning Multi-Modal LLMs for Olympiad-Level Question Answering," Working Paper
- **Fatemi, S.** and Hu, Y., "Enhancing Financial Question Answering with a Multi-Agent Reflection Framework," Submitted to 5th ACM International Conference on AI in Finance
- **Fatemi, S.** and Hu, Y., "FinVision: A Multi-Agent Framework for Stock Market Movement and Trading Prediction," Submitted to 5th ACM International Conference on AI in Finance
- **Fatemi, S.** and Hu, Y., "A Comparative Analysis of Instruction Fine-Tuning LLMs for Financial Text Classification," revised and submitted to *ACM Transactions on Management Information Systems, Special Issue of Large Language Models*
- **Fatemi, S.** and Hu, Y., "A Comparative Analysis of Fine-Tuned LLMs and Few-Shot Learning of LLMs for Financial Sentiment Analysis," Accepted at *AAAI 2024 Workshop on AI in Finance for Social Impact* [\[Link\]](#)
- Basak, E., Al Balawi, R., **Fatemi, S.**, and Tafti, A., "When Crisis Hits: Bike-Sharing Platforms amid the Covid-19 Pandemic," *Plos One*, volume 18, April 2023 [\[Link\]](#)

Skills

Large Language Models LangChain, Parameter-Efficient Fine-Tuning (PEFT), Retrieval-Augmented Generation (RAG), Alignment from Human/AI Feedback, DPO, ORDP, LORA Fine-tuning, AutoGen

Programming Python (Scikit-learn, Keras, TensorFlow, PyTorch, Transformers, HuggingFace), R

Honors and Awards

Doctoral Scholarship and CBA Doctoral Fellowship, Department of Information and Decision

Sciences, University of Illinois at Chicago

2019 - present