

# Sorour Fatemi

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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

- 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., "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
	Python (Scikit-learn, Keras, TensorFlow, PyTorch, Transformers, HuggingFace), R
Programming	
Cloud	AWS, Sagemaker

## Honors and Awards

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

2019 - present

Sciences, University of Illinois at Chicago

### Graduate Assistantship, Department of Information and Decision Sciences, University of Illinois at

2019 - present

Chicago