Ali Elahi
Data Scientist

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Education

PhD Computer Science | University of Illinois (Chicago), IL, USA   2024 – Present
Advised by Cornelia Caragea, Focus Area: Natural Language Processing (NLP),
Large Language Models, Information Retrieval, Domain Adaptation, Financial NLP

Master's Computer Science | University of Illinois (Chicago), IL, USA   May 2024
Thesis: AUM-RF: Co-Training as a Domain Adaptation for Bootstrapping three based models; (GPA: 4.0 / 4.0)

B.Sc. Computer Engineering | University of Tehran, Tehran, Iran   May 2022
Thesis: Online/Offline Evaluation of Recommendation Algorithms (GPA: 3.68 / 4.0)

Technical Proficiencies

- **Programming Languages**: Python, R, C++, SQL, Java, Docker, Kubernetes
- **Data Science Tools**: Numpy, Pandas, Scikit-learn, TensorFlow, PyTorch, Hugging Face, WandB, Cloud Computing, Spark, Airflow, LangChain, Databricks
- **Software**: AWS, Latex, Linux, Git, Microsoft Office (Word, Excel)

Research & Work Experience

Research Assistant | University of Illinois (Chicago), IL, USA   2022 – Present
Focused on Retrieval Augmented Generation (RAG), prompting and fine-tuning LLMs for financial-NLP and Stance Detection tasks. domain adaptation techniques for Masked and Large LMs and traditional machine learning.

Teaching Assistant, Natural Language Processing | University of Illinois (Chicago), IL, USA   Spring 2022

Publications

- Elahi, A., Taghvaei, F. (2024 - ICAIF) Combining Financial Data and News Articles for Stock Price Movement Prediction by Prompting Large Language Models
- Elahi, A., Shumway, D., Caragea, C., Caragea D., Dorevitch S., (2024 – BigData IEEE) Machine Learning and Large Language Model –Based Regressors for Surface Water Bacteria Level prediction using Domain Adaptation
- Elahi, A., Zirak, A. (2021, Arxive). A Comparative Study of Recommendation Algorithms: Online and Offline Evaluations on a Large-scale Recommender System in Persian Language
- Elahi, A., Caragea, C. (Under prepration) Large Language Model Ensemble learning based Algorithm for Stance Detection

Notable Course Projects

Deep Learning & Natural Language Processing
- Retrieval Augmented Generation – Tree based News summarization for financial movement prediction

- English to Persian Machine Translation with Transformer
- Fine-tuning Large Language models for political stance detection

Big Data / Data Mining

- MapReduce for Social Media Friend Recommendation [Python, Spark]
- Product Recommendation Using Association Rules [Python, Spark]

Reinforcement Learning

- Markov Decision Process Profit Optimization - On-policy/Off-policy Monte-Carlo, Double Q- learning, Tree Back-up, SARSA and n-Step Expected SARSA [Codes]
- Policy Iteration Algorithm for a Profit Maximization Problem [Codes]