

Hossein Arjomandi

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EDUCATION

University of Illinois Urbana-Champaign

MASTER OF SCIENCE IN COMPUTER SCIENCE

Thesis: Community detection in large citation graphs

Champaign, IL

Expected June 2024

Amirkabir University of Technology

BACHELORS OF COMPUTER ENGINEERING, BACHELORS OF CIVIL ENGINEERING

Tehran, IR

Jun 2022

EXPERIENCE

Graduate research assistant

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Champaign, IL

Aug. 2022 - present

- Similarity-based graph clustering:** Obtained, engineered, and analyzed a 8M-node graph through **data engineering**, **suggested a new edge-weighting method** and applied **clustering algorithms** and evaluated results using clusters metadata similarity. Used **Pyspark** and Python **Multiprocessing** for parallelization.
- Graph data engineering:** Engineered a **high-performance Neo4j database** with 6 million edges from **PostgreSQL** tables for a musician graph, including graph visualization and performance optimization to enhance query speed and usability.
- LLM interpretation:** Fine-tuned various **LLMs** of code and analyzed correlations between program graph properties and attention weights.
- On the fly classifier repair:** Leveraged uncertainty monitor to **improve post-deployment classifying accuracy** for various image classifiers.

Software Engineer intern

AMERICANAG™

Schaumburg, IL

Jun. 2023 - Aug. 2023

- Improved** claims handling by **implementing a new claims portal**, as measured by **reduced human intervention** where mailing claims spreadsheets was no longer required.
- Created **RESTful APIs** leveraging **.NET Core**, seamlessly integrated with **Microsoft SQL Server**, and crafted a user-friendly front-end using **Vue3** and **TypeScript/Javascript** to enhance system functionality and user experience, measured by customers' feedback.
- Participated in **requirement elicitation**, **design**, and **documentation** phase of the project with stakeholders and other senior developers, translating their needs into **technical requirements**.
- Collaborated in a **data-driven** project **analyzing trends in insurance and reinsurance** using Python and presented to the executive team. **Justified increasing losses** accompanied by **positive feedback from the executive team**.

SKILLS

Soft skills	Critical thinking, Teamwork, Creativity, Leadership, Bilingual
Languages	Python, Java, Javascript, C++, C#, PHP
Data science	Machine learning, NLP, Data engineering, Graph mining, Power BI, Spark, Hadoop
Frameworks	Vue3, React, .NET, Django, PyTorch, Keras, Git, Android
Databases	SQL, MSSQL, MongoDB, Neo4j
Systems	Linux, Shell scripting, Docker, Kubernetes, Node.js
Certificates	Coursera deep learning, Coursera machine learning, Datacamp TensorFlow

PROJECTS

Neo4j Graph data engineering

- Migrated musicians and session data from **PostgreSQL** to **Neo4j**. Achieved **optimized performance** as measured by runtime around **40s** on **6m** edges, by using **efficient design**. Successfully delivered the solution to stakeholders for the first phase.

Distance-based graph clustering pipeline

- Created an **ETL pipeline** using **PySpark** to regularly download 0.5 TB of XML data about scientific metadata, **parsed** the files and **cleaned** the text, and stored them in distributed **parquet** files, and obtained a data quality report.
- Given a **8-million nodes** citation graph of papers, extracted and **engineered features** of papers from parquet files, combined these features to give importance weights to **62-million** edges, and **clustered** the weighted graph to detect communities for research summarization.

Claims form modernization

- Developed a new claims portal, replacing spreadsheets, in a developer team. Collaborated with stakeholders through frequent meetings. Utilized **Vue3**, **.NET** minimal APIs, **Typescript**, and **SSMS**. Successfully productionized the code.

Exploratory data analysis in insurance

- Led intern team** in studying weather trends' influence on insurance and reinsurance. Collected multi-year claims data. Conducted **data analysis**, presenting valuable insights to executives, and **receiving positive feedback**, and **Demonstrated leadership capabilities**.