Siavash (Isaac) Barqi-Janiar

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Experience

Data Engineer | Docma   Jan. 2024 – Present

○ Built and deployed scalable ETL pipelines using **advanced Python coding** and **Apache Kafka** on **Google Kubernetes Engine (GKE)** by containerizing it with **Docker** and scheduling it using a **CronJob**, leading to **60% faster deployment cycles** and improved **workflow reproducibility by 90% across the microservices architecture**, enabling fault-tolerant, real-time data processing and powering sales forecasting models such as **alpha-lag-decay** and **Sci-kit learn ML tools** with **86% prediction accuracy**, while reducing **infrastructure overhead by 33%** and **processing time by 40%**.

○ **Automated 80% of data workflows and reporting processes** using **Python**, **Pandas**, **SQL**, **dbt**, and **Node.js**, reducing **manual effort by 12+ hours/week** and enabling **self-service analytics** across teams with minimal need for manual intervention.

○ Designed **CLI tools** to manage and trigger ETL workflows, streamlining development and deployment processes and reducing **manual setup time by 70%**, while increasing team productivity and consistency across environments.

○ Optimized **Snowflake** performance using **advanced SQL techniques**, e.g. table restructuring, partitioning, and indexing strategies, resulting in **2.55x speedup** on query execution and **25% reduction in compute costs**.

○ Developed a **RESTful API** using **Flask** and **Vue.js** to provide real-time stock market predictions, and implemented interactive dashboards with **Plotly**, **Dash**, and **Matplotlib**, resulting in a **30% reduction in decision-making time** for board members and senior engineers through improved data accessibility and visualization clarity.

○ Developed a **RAG-based chatbot** using **Langchain** and **OpenAI's GPT-3.5 LLM model**, incorporating **recursive character-level tokenization** for document chunking, which improved **retrieval precision by 14.7%** and reduced answer hallucination in long-context queries.

○ **Expert in Python, Hugging Face, and PyTorch**, implementing Nested Training and Sorted Speculative Sampling, and leveraging **DeepSpeed** and **FSDP** for distributed LLM training on diverse datasets.

Research Assistant | York University   Sep. 2021 – Feb. 2024

○ Proposed a **transfer learning (TL)** method based on **feature extraction** to predict jamming patterns in a communication network. Reduced the time complexity of the primary model by **30 times**.

○ Realized a comprehensive **XAI** method comprising **pattern recognition** and **rule learning** for network security. Improved the **transparency** of the model compared to the benchmark explainable models **by 17%**, whilst having a **32% less error rate**.

○ Introduced an evaluation environment comparing the performance of **Recurrent Neural Network (RNN) structures** utilizing **Long Short-Term Memory (LSTM)** layers, achieving a **13% higher throughput rate** than **Convolutional Neural Network (CNN) structures** while having **x1.2 fewer parameters**.

○ Implemented a **Transformer-based model** combined with **K-means clustering** to handle sparse data, using filtering and **PCA** as preprocessing steps, and achieved **88% accuracy** in annotating correct jamming pattern groups.

Research Assistant | Amirkabir University   Feb. 2020 – Jan. 2021

○ Realized an efficient **model-free reinforcement learning** MAC protocol for frequency resource allocation. Surpassed the benchmark protocol with nearly **60% better throughput**.

○ Leveraged an **online actor-critic** algorithm for access problems in heterogeneous networks. Achieved **95% throughput** in the network marked as the **highest possible performance**.

Recent Publications [🔗 Link]

○ S. B. Janiar, P. Wang, "Intelligent Anti-jamming based on Deep Reinforcement Learning and Transfer Learning," *IEEE Transactions on Vehicular Technology*, 2023.

○ S. B. Janiar, Xian Lu, P. Wang, "Explainable Reinforcement Learning for Wireless Security at the Physical Layer: A Survey," IEEE Transactions on Wireless Communications, 2022.

Education

York University | Master od Science in Computer Science   Sep. 2021 - May 2023
Field of Study: AI and Machine Learning   GPA: 8.8/9

Amirkabir University | Bachelor od Science in Electrical Engineering   Sep. 2016 - Jun. 2021
Focus: AI and Machine Learning   GPA: 3.84/4