Siavash Barqi-Janiar

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Highlights and Qualifications

○ Data Scientist / ML engineer with over **4 years** of hands-on experience in programming.

○ Master in **Python**, **SQL**, **Apache Services**, **C/C++**, **Java**, and **R**.

○ Proficient in designing **ETL** pipelines with **automated workflows** to process data from different complex resources, and populating results in enterprise data warehouses.

○ Expertise in supervised, unsupervised, reinforcement, and deep learning models, with **5 research publications**.

○ Hands-on Experience with **Large Language Models (LLM)** and **fine-tuning** them.

○ Experienced with Google Cloud Platform (**GCP**) services such as APIs, clusters, containerization, virtual machines, data processing tools, etc.

○ Familiar with automatic scaling and management tools such as **Google Kubernetes Engine** (GKE) and **Managed Instance Groups** (MIGs).

○ Experienced in text data preprocessing, including **cleansing**, **tokenization**, and **word embedding**.

○ Skilled in information systems strategy, planning, and development, with expertise in analyzing customer needs, requirements, and competitive landscape for effective project management.

Experience

Junior Data Engineer | Docma   Jan. 2024 – Present

○ Designed an **ETL pipeline** from 0 to 100% including a Command Line Interface (CLI), data preprocessing, alpha-lag-decay process, and exporting the results, predicting future sales attribution.

○ **Automated 80%** of data workflows and batch processes and minimized the need for manual intervention.

○ Enabled importing and exporting data from/to four different sources: **local**, **API**, **AWS S3**, and **PostgreSQL (PSQL) database**.

○ Developed and maintained database architectures and schemas using **PSQL** to optimize query performance.

○ Created and maintained comprehensive **documentations** for data engineering processes and systems, leading to a faster onboarding of new team members.

Research Assistant | York University   Sep. 2021 – Apr. 2023

○ 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**.

Research Assistant | Amirkabir University   Jan. 2021 – Jun. 2021

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

○ Optimized the resource allocation system in distributed computer networks with prioritized packets using ML/AI, which increased the throughput of the wireless system **by approximately 15%**.

Education

York University | MS Electrical Engineering and Computer Science   2023
Field of Study: AI and Machine Learning   GPA: 3.8 / 4.0
Amirkabir University | BS Electrical Engineering   2021
Focus: Telecom Engineering, AI, and Machine Learning   GPA: 3.4 / 4.0

Projects [Link]

Real-Time Stock Market Data Pipeline:
- Implemented a robust **ETL process** to ingest, transform, and store real-time data from stock exchanges.
- Developed a **RESTful API** using Flask and HTML for accessing real-time stock market data.
- Utilized **Apache Kafka** to ensure reliable and scalable data streaming and processing.
- Visualized the output of the data pipeline (moving average) using **Matplotlib**, enhancing data comprehension and decision-making.
- Utilized **PSQL** for efficient data storage and retrieval, optimizing database queries and reducing data retrieval times by 50%.

RAG based chatbot: [https://siaschatbot.streamlit.app/]
- Developed a **RAG-based web app** capable of retrieving information from any webpage, and answering questions based on webpage information. Simulating a conversational chatbot working for any webpage.
- Used **Langchain** and **OpenAI's GPT-3.5 LLM model** for the implementation.

ML Based Electric Vehicles (EV) Charging Management in Smart Cities Domain:
- Utilized **TensorFlow 2** and a **Docker container** for building an **evolutionary calculation** model to minimize EV charging costs based on the city electricity price movements.
- Received recognition for its innovative approach, winning an **$8000** prize for its contribution to sustainable transportation and smart city initiatives.

Spam Email Detector:
- Fine-tuned an **LLM** for spam email detection, prompt engineered it using **LangChain**.
- Wrote a customized prompt code and used **GCP** for GPU-based training and evaluation.
- Achieved 20% improvement in accuracy over the benchmark.

Skills
- **Programming Languages:** Python, SQL, C/C++, Java, R, HTML, JavaScript, C#.
- **Data Analysis Frameworks:** Pandas, Spark, PostgreSQL (SQL), Psycopg2, Apache Kafka, Apache Spark, Regex, Boto3, AWS Wrangler, Snowflake.
- **LLM / ML Frameworks:** Sci-kit Learn, LLAMA, LangChain, HuggingFace, Chroma, PyTorch, Tensorflow, Keras, Spark MLib.
- **Cloud Tools:** AWS, Docker, Google Compute Engine, Google Cloud Storage.
- **API and Visualization Tools:** Flask, Gunicorn, Postman, Streamlit, Kivy, Matplotlib, Git, LaTeX, Qt Design.

Publications [Link]

- S. B. Janiar, P. Wang, "Intelligent Anti-jamming based on Deep Reinforcement Learning and Transfer Learning," *IEEE Transactions on Vehicular Technology*, 2023.
- Barqi Janiar S, Pourahmadi V, "Deep-reinforcement learning for fair distributed dynamic spectrum access in priority buffered heterogeneous wireless networks," *IET Commun. 2021;19.* https://doi.org/10.1049/cmu2.12098
- S. B. Janiar, P. Wang, "A transfer learning approach based on integrated feature extractor for anti-jamming in wireless networks," *IEEE PIMRC, Toronto*, 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.
- S. B. Janiar and V. Pourahmadi, "Deep-Reinforcement Learning for Fair Distributed Dynamic Spectrum Access in Wireless Networks," *2021 IEEE 18th Annual Consumer Communications & Networking Conference (CCNC)*, 2021, pp. 1-4, doi: 10.1109/CCNC49032.2021.9369536.
- S. B. Janiar, A. Eckford, "The Theory and Applications of Coded Modulation in Digital Communications: A Survey", *York University*, Dec. 2021.