Siavash Barqi Janiar

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Highlights and Qualifications

- Machine Learning / AI engineer with over **7 years** of hands-on experience in designing, implementing, and evaluating ML models on real-world data.
- Proficient in **Python**, **C/C++**, **C#**, **SQL**, **R**, and **GCP**.
- **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.
- Complete familiarity with **SQL** queries and implementing them with Python.
- 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**.
- Adept at crafting concise data reports with visualization tools such as **Power BI**, **Tableau**, **Excel**, **Seaborn**, and **Matplotlib** to enhance efficiency and track KPIs.
- Skilled in information systems strategy, planning, and development, with expertise in analyzing customer needs, requirements, and competitive landscape for effective project management.

Education

York University — Sep. 2021 – Apr. 2023
Master of Applied Science in Electrical Engineering and Computer Science (GPA: 3.8 / 4.0) — Toronto, ON

Amirkabir University (Tehran Polytechnic) — Sep. 2016 – Apr. 2021
Bachelor of Science in Electrical Engineering (GPA: 3.4 / 4.0) — Tehran, Iran

Experience

Lead Developer — Aug. 2023 – Present
Ugrow — Toronto, ON

- Joined the company at its first days and took responsibility as the developing team leader.
- Organized the team responsibilities in order to a smooth progress in the companys growth.
- Designed a comprehensive **LLM pipeline** in order to create content and create online courses for the subjects requested by the customers.
- Reduced **25%** of the company's monthly costs by migrating the ML models to **Google Cloud Platform (GCP)**.
- Lead the team in order to design a stable back-end and front-end schemes for the company's website.
- Continuing slight contributions to the company's progress as a share-holder.

Machine Learning Researcher — Sep. 2021 – Apr. 2023
York University — Toronto, ON

- 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 **x30**.
- Realized a comprehensive **XAI** method comprising **feature extraction**, **pattern recognition**, and **rule learning** for network security.
- Improved the **transparency** of the model compared to the benchmark explainable models **by 17%**, while having a **32% less error rate**.

- Introduced an evaluation environment comparing the performance of **RNN networks** utilizing **LSTM** layers, achieving a **13% higher throughput rate** than **CNN networks** while having **x1.2 fewer parameters**.

Machine Learning Developer (Co-op) Jun. 2019 – Jan. 2021
Digikala.com Tehran, Iran

- Proficiently utilized **Cloud Storage** and **BigQuery GCP** services to deploy auto-scaling strategies resulting in a **60% reduction** in maintenance and hardware costs.
- Designed an **LLM fine-tuning** pipeline for the **knowledge-based Q/A bot** for the company's web-page.
- Tested and evaluated the performance of **BERT**, **GPT**, and **T5** LLM models for different sections of the pipeline to obtain the highest possible performance for the Q/A bot.
- Improved customer service performance by **50%**.

Machine Learning Developer (Co-op) May 2017 – Apr. 2018
The Institution of Information and Communications Technology (ICT) Tehran, Iran

- Developed a **federated learning** algorithm decreasing the collision rate of the secondary users in a cognitive radio network by **24%**.
- 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**.

Projects (Selected) [https://siavashbarqijaniar.github.io/projects.html]

Image Generating AI Model:

- Developed an online text-to-image **NLP model** training based on **federated learning** algorithms. A lower-level similar job to Dall.E, and Midjourney.
- Applied **grid search** to tune the AI model hyperparameters and find the optimum values. Deployed the model to be usable online using **Docker** and **Flask** enabling the Python code to be executed online on a server.

ML Based Electric Vehicles (EV) Charging Management in Smart Cities Domain:

- Utilized **TensorFlow 2** and a **Docker container** for building end-to-end **evolutionary calculation** pipelines, to optimize EV charging energy consumption.
- Received recognition for its innovative approach, winning an **$8000** prize for its contribution to sustainable transportation and smart city initiatives.

Spam Email Detector:

- Designed and fine-tuned an LLM pipeline 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 baseline.

Skills

- **Programming Languages:** Python, Cython, Go, C/C++, C#, R, MATLAB, Java, SQL, Spark, Scala, Git, LaTeX.
- **ML / DL Frameworks:** Tensorflow, Keras, PyTorch, Sci-kit Learn, Pandas, Transformers (NLP/LLM models), Gensim, OpenCV.
- **Cloud Tools:** AWS, Microsoft Azure, Docker, Google Compute Engine, Google Cloud Storage.
- **Data Visualization Tools:** Power BI, Tableau, Microsoft Excel, Seaborn, Matplotlib.
- **Software:** Vivado, Simulink, Quartus, ADS.

Publications (Selected)

- 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.