Siavash Barqi Janiar

SiavashBarqi@gmail.com • 647-894-1497 • linkedin.com/in/SiavashBarqiJaniar • SiavashBarqiJaniar.github.io

Education

York University — Sep. 2021 – Apr. 2023
Master of Applied Science in Electrical Engineering and Computer Science (GPA: A+) — Toronto, ON
- Nominated for the University's Best Thesis of the Year.

Amirkabir University(Tehran Polytechnic) — Sep. 2016 – Apr. 2021
Bachelor of Science in Electrical Engineering (GPA: 8.4 / 10) — Tehran, Iran

Experience

Machine Learning Researcher — Sep. 2021 – Apr. 2023
York University — Toronto, ON
- Proposed an **explainable artificial intelligence** (**XAI**) based method combined with **integrated feature extractor** to estimate jamming patterns in a wireless network. Reduced the time complexity of the models **by x30**.
- Realized a comprehensive XAI method for the reinforcement learning model used for anti-jamming. The proposed method is a combination of **feature extraction, pattern recognition, and rule learning** algorithms using **random forest and decision trees, K-means clustering, and RIPPER** methods, respectively, which increased the transparency of the model compared to the benchmark explainable models **by 17%**, while having **32% less error**.
- Introduced a recurrent neural network architecture optimizing the **LSTM** layer, achieving **13% higher throughput** than convolutional neural networks while having **x1.2 less parameters**.

Machine Learning Developer — Jun. 2019 – Jan. 2021
Digikala.com — Tehran, Iran
- Integrated **AWS S3** (**Simple Storage Service**) with **AWS CloudFront** to achieve low-latency content delivery, improving website performance during peak usage periods **by 25%** less delay.
- Proficiently utilized **GCP** services such as **Compute Engine**, **Cloud Storage**, and **BigQuery** to deploy auto-scaling strategies resulting in a **60% reduction** in maintenance and hardware costs.
- Developed **NLP** models using **TensorFlow** and **PyTorch** and designed custom chatbot models, reducing customer support response times **by 50%**.

Machine Learning Developer - Internship — May 2017 – Apr. 2018
The Institution of Information and Communications Technology (**ICT**) — Tehran, Iran
- Realized WiFi-LTE coexistence in 5GHz unlicensed band using **double Q-iteration** algorithm decreasing the collision rate of the cognitive radio network **by 24%** compared to the legacy protocols.
- Utilized ML for distributed dynamic spectrum access increasing the throughput of the network **by nearly 60%** compared to slotted ALOHA MAC protocol.
- Utilized **online actor-critic** ML algorithm for access problems in heterogeneous wireless networks using **achieving 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 15%** compared to the previous works' algorithms.

Selected Projects [SiavashBarqiJaniar.github.io/projects]

Imagining Machine:
- Developed an online ML system using **block-chain** method to train a supervised learning based model using **federated learning** algorithms to learn how to imagine numbers. A lower-level similar job to Dall.E 2, and Midjourney.
- Deployed it using **Azure ML** and used **grid search** to fine-tune the ML model. Deployed the model to be usable online using **Docker** enabling the Python code to be executable online on a server.

ML Based Electric Vehicles Charging Management in Smart Cities Domain:
- Received recognition for its innovative approach, winning an **$8000** prize for its contribution to sustainable transportation and smart city initiatives.
- Utilized **TensorFlow Extended** (**TFX**) for building end-to-end ML pipelines, and employed a **Docker container** for it.

Skills

- **Programming Languages:** Python, Go, SQL, C/C++, C#, R, MATLAB, Java, JavaScript, CSS, HTML, PHP, Linux, Git, LaTeX.
- **ML / DL Frameworks:** Tensorflow, Keras, PyTorch, Sci-kit Learn, Pandas, OpenCV, Qt Design, Socket Programming, Thread Programming, Aircrack-ng.
- **Cloud Tools:** AWS, ETLs, ECS, GCP.
- **Software:** ADS, R Studio, Vivado, Simulinks.

Selected Papers

- 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