Soroosh Sorkhani

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Education

- **Toronto Metropolitan University** — Toronto, Canada
  Master of Science in Information Technology Management — Sep 2019 - Jun 2021
  Thesis: Feature-based Question Routing in Community Question Answering Platforms
  Supervisor: Dr. Ebrahim Bagheri, Dr. Morteza Zihayat

- **Kharazmi University** — Tehran, Iran
  Bachelor of Science - Industrial Engineering — Sep 2014 - Jul 2018
  Project: Implemented decision trees to predict university students' performance on their final exam

Summary

- Passionate and dedicated researcher at York University, with a strong focus on machine learning and its advancements. My academic journey showcases my deep interest in understanding computer vision and natural language processing. I take pride in being a fast learner and a dependable team player. I am eager to tackle new challenges and expand my knowledge and skills. My excitement for machine learning drives me to explore its applications in various exciting fields such as healthcare and autonomous driving. Additionally, I am enthusiastic about the potential of machine learning in revolutionizing diverse domains beyond my current focus, broadening my horizons to contribute innovative solutions that address real-world problems.

Research and Work Experience

- **York University** — Toronto, Canada
  Research Assistant — Jun 2023 - Present
  - Developing an advanced **computer vision** system to enable real-time identification of parked cars on urban streets by analyzing dashboard camera feeds. I am leading the deployment and evaluation of various state-of-the-art models, such as the **Segment Anything Model** and **YOLOv8**.
  - Implementing machine learning models, such as **Graph Neural Network** and **Gradient Boosted Trees**, for predicting parking violations across an extensive network of 940 commercial vehicle parking facilities in Downtown Toronto. The study results will be published as an academic paper.

- **Canadian Tire Corporation** — Toronto, Canada
  Business Analyst — Sep 2021 - Sep 2022
  Successfully monitored transportation operations and identified opportunities for improvement. Expertly managed **databases** using SQL and performed **statistical analyses** to create detailed daily and weekly reports and dashboards for internal teams and managers. Led the improvement and refinement of a data-driven managerial report containing over 5000 daily records on transportation equipment repairs. Streamlined operations by **integrating data** from multiple databases and automating the process using Python, resulting in a 50% reduction in daily processing time.

- **Toronto Transit Commission (TTC)** — Toronto, Canada
  Research Assistant — Jan 2021 - Jun 2021
  Analyzed and optimized the production process of a **gradient boosting regression** model built using Python and SQL and deployed on **AWS** infrastructure, developed by BAI Canada for TTC, to accurately predict real-time passenger counts at subway stations. Identified problems within the data pipeline and consulted on improving production in data sourcing and model development. Presented 4 potential solutions, including utilization of advanced time series models such as RNN and LSTM, to enhance overall model performance.

- **Laboratory for Systems, Software and Semantics, Toronto Metropolitan University** — Toronto, Canada
  Research Assistant — Sep 2019 - Jun 2021
  Developed an expert **recommending system** for Q&A platforms, such as Stack Overflow and Quora. Defined 74 features using techniques such as **LDA topic modeling**, **word mover's distance text similarity**, and **graph embedding**. Optimized the features through **feature engineering** and proposed a **learning to rank** approach that achieved 16.41% higher performance than the state-of-the-art model in NDCG@10 on 5 websites' datasets, containing over 15,000 users and 21,000 questions. Provided insights on the most important and effective features.

Publications

- Sorkhani, S., Etemadi, R., Bigdeli, A., Zihayat, M., & Bagheri, E. (2022). Feature-based Question Routing in Community Question Answering Platforms. *Information Sciences*

Teaching Experience

- **Toronto Metropolitan University** — Toronto, Canada
  Teaching Assistant — Sep 2019 - Dec 2020
  Instructed in 5 courses:
  - **Business Intelligence and Analytics**: Running labs, teaching Machine learning in R programming language
  - **Introduction to Big Data Analytics**: Running labs, teaching Python, R, SQL, NoSQL
  - **Business Information Systems**: Running labs, teaching excel
  - **Foundation of Information Systems**: Running labs and teaching excel
  - **Managerial Decision Making**: Practicing mathematical questions

Certificates

- **DeepLearning.AI** — Online
  Deep Learning Specialization on Coursera — Jun 2022 - May 2023
  - **Neural Networks and Deep Learning**
  - **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization, and Optimization**
  - **Structuring Machine Learning Projects**
  - **Convolutional Neural Networks**
  - **Sequence Models**

Projects

- **Neural Style Transfer**: Developed a program based on a Deep Neural Network to generate artistic images with arbitrary content and style.
- **Face Recognition**: Developed a face recognition system, inspired by FaceNet.
- **Semantic Image Segmentation**: Built a U-Net to predict a label for every single pixel in an image from CARLA self-driving car dataset.
- **Gini Feature Importance for RankLib Random Forest**: Developed a program to compute Gini importance of features in a random forest created by RankLib to identify the most effective features.
- **Breast Cancer Diagnosis**: Applied machine learning models, including Regression, Decision Tree, and Neural Network, to predict breast cancer diagnosis using digital images from the Breast Cancer Wisconsin (Diagnostic) Data Set. Utilized fine needle aspirate (FNA) images for training and prediction.

Skills

- **Programming Languages**: Python, R, SQL, NoSQL
- **Libraries**: PyTorch, scikit-learn, TensorFlow, Keras, OpenCV, SciPy, NLTK, fastText, Gensim, spaCy, L2R
- **Field**: Machine Learning, Deep Learning, CNN, Computer Vision, NLP, Transformers, Time Series, Neural Networks, Information Retrieval, Data Mining, Network Analysis
- **Systems**: AWS, Unix/Linux

Community Involvement

- Co-hosting an educational podcast on the history of Canada in Persian. — Sep 2023 - Present
- Tutoring in multiple subjects such as biostatistics, statistics, and programming — Feb 2023 - Present
- Mentored international graduate students in the Tri-Mentoring Program, TMU. — Fall 2020
- Assisted IBM in delivering CASCON x EVOKE 2019 Conference. — Nov 2019

Honours and Awards

- Graduate Development Award by Ted Rogers School of Management — Mar 2020
- Exempted from Graduate University Entrance Exam as an exceptional-talent student — Jul 2018

Hobbies

- Rock Climbing, Hiking, Theatre, Piano