Soroush Omranpour

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EDUCATION

McGill University - Mila	2022 – Present
MSc. of Computer Science	*Montreal, Canada*
Sharif University of Technology	2016 – 2021
BSc of Computer Engineering – GPA: 3.85	*Tehran, Iran*

SKILLS

Languages: Python, Bash, SQL, Java

Tools/Frameworks: Git/Github, Flask, FastAPI, Docker

Machine Learning: PyTorch, Tensorflow, NumPy, Pandas, Matplotlib, sklearn, Transformers, Deep Graph Library

Relevant Courses: Applied Machine Learning, Probability and Statistics, Signal Processing, Linear Algebra, Algorithms and Data Structures, Tensor Decomposition, Natural Language Understanding

EXPERIENCE

Research Assistant — 2022 – present
Quebec AI Institute (Mila) — *Advisors: Reihaneh Rabbany, Guillaume Rabusseau*

- Developing a **higher-order tensor Transformer** architecture that operates on higher-order multi-dimensional input such as spatiotemporal data or multivariate timeseries, etc.
- Developing a **dynamic graph learning** method for **mental health** disorder detection on social media users.
- Developing a **multimodal** method to perform stock market movement prediction from historical price data and social media text.

Research Assistant — 2021
Music and Artificial Intelligence Lab - Taiwan AI Labs — *Advisor: Yi-Hsuan Yang*

- Developed a python library called **DeepMusic** (available via pip) supporting MIDI format to simplify musical data representation and data preprocessing for neural networks.
- Developed a music generation toolkit to train a transformer decoder on a large MIDI corpus capable of generating multi-instrument polyphonic symbolic music.
- Developed a method to perform melody extraction from symbolic music using transformer VAE architecture.

Deep Learning Engineer — 2020 – 2022
ZLab - Fanap Inc. — *Tehran, Iran*

- **Real-time Speech to Text** Project: Developed a production-ready pipeline for speech recognition on Persian including noise filtering, transformer-based audio encoder, transformer-based text decoder, and LM corrector all serving a FastAPI backend.
- **Text to Speech** Project: Developed a method to perform speech synthesis on Persian as a low-resource language using transfer learning across languages.
- **Semantic Search Engine** Project: Developed a production-ready hybrid search system using lexical (Elastic Search) and semantic (embedding vector) search algorithms for an online book store. This project required careful data collection, model training on a large corpus and exhaustive system finetuning.

Research Assistant — 2019
Machine Learning and Computer Vision Lab - IST Austria — *Advisor: Christoph Lampert*

- Developed a VAE-based **generative model** trained on Raven Progressive Matrices to investigate abstract reasoning capabilities of neural networks.

Research Assistant 2018 – 2020

Data Science and Machine Learning lab - Sharif University of Technology *Advisor: Hamid R. Rabiee*

- Executed large-scale text data processing, model implementation, and performing experiments as part of the project for fake news detection on social networks.
- Investigated the cross-domain adaptation capacity of SOTA models for fake news detection by performing transfer learning among multiple datasets.
- Developed a python package called **SocialPhi** to calculate an information-theoretic metric to measure group performance based on temporal activities as time series. This was part of my bachelor thesis Unified Behavioral Analysis of Social Network Users.

PUBLICATION

- M. Ramezani, M. Rafiei, **S. Omranpour**, H. Rabiee. News Labeling as Early as Possible: Real or Fake? In IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2019

AWARDS & ACHIEVEMENTS

- **Mila Graduate Scholarship**: Awarded to research students for demonstrated expertise in artificial intelligence in the form of a stipend.

- **Iran's National Elites Foundation Memeber**: For being ranked among the top 0.01 % of students in the nation-wide university entrance exam.