ALI NAQVI

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SUMMARY

I have a strong passion for creative algorithms and techniques to solve complex problems. Recently, my work has been focused on evolutionary computation and its methodology with reinforcement learning for time series forecasting. Parallel with this, I research state-of-the-art deep learning models which deviate from complexity or time-inefficiency in small data. Overall, I'm always eager to acquire new skills, understand important challenges, and find impactful solutions.

EDUCATION

McMaster University *Sept 2023 - August 2025 (expected)*
MSc in Computer Science (Thesis)
GPA: 3.90/4.0 (equivalent to 4.0/4.0 percentage-wise)
Related courses: Evolutionary Computation, Neural Networks with Graphs

University of Windsor *June 2023*
BSc Of Computer Science (Honours), Artificial Intelligence Specialization
GPA: 3.7/4.0
Related courses: Neural Network and Deep Learning, Design and Analysis of Algorithms, Linear Algebra

RESEARCH INTERESTS

- Evolutionary computation
- Reinforcement Learning
- Deep Learning
- Computational Neuroscience and Bio-Inspired AI
- GNNs and Geometric Deep Learning

RESEARCH EXPERIENCE

Web Application for Sequential Recommendation System September 2022 - March 2023
Supervisors: Dr. Luis Rueda

- Modeled a sequential dynamic movie recommendation system using Deep Reinforcement learning
- System allows multiple users and gives users new recommendations based on their selections.
- Created using Python, JavaScript, TensorFlow, Flask, ReactJS

Medical Document PHI Filter January 2023 - April 2023
Supervisors: Dr. Edward Komissarchi

- Conducted research on PDF processing and analyzed sensitive medical data using various techniques.
- Successfully implemented various techniques to extract and analyze important data from PDFs, leading to more efficient data processing.
- Evaluated BERT deidentification models on medical data, including the Stanford deidentification base model and models trained on the i2B2 dataset.

PUBLICATIONS

Towards Evolving Creative Algorithms: Musical Time Series Forecasting with Tangled Program Graphs June 2024
Ali Naqvi, Stephen Kelly *(Status: Accepted as Workshop Paper)*

- 2024 Conference on Artifical Life (`https://2024.alife.org/`)

Evolving Many-Model Problem Solvers June 2024
Stephen Kelly, Eddie Zhuang, Ali Naqvi, Tanya Djavaherpour *(Status: Accepted as Book Chapter)*

- Genetic Programming Theory & Practice XXI (`http://gptp-workshop.com`)

Improving Efficiency of Indexed Memory for Tangled Program Graphs July 2024
Tanya Djavaherpour, Ali Naqvi, Stephen Kelly *(Status: Submitted to Conference)*

- 16th International Conference on Evol (`https://ecta.scitevents.org/`)

TEACHING EXPERIENCE

COMPSCI 2SD3: Concurrent Systems [McMaster University] Winter 2024
Role: Teaching Assistant
Responsibilities: Taught weekly labs for all sessions, and contributed to grading and feedback.

COMPSCI 3GC3: Computer Graphics [McMaster University] Fall 2023
Role: Teaching Assistant
Responsibilities: Taught weekly labs for all sessions, and contributed to grading and feedback.

Programming for Beginners [University of Windsor] Winter 2023
Role: Teaching Assistant
Responsibilities: Contributed to grading and feedback.

Operating Systems [University of Windsor] Fall 2022
Role: Teaching Assistant
Responsibilities: Held weekly office hours, and contributed to grading and feedback.

Key Concepts in Computer Science [University of Windsor] Summer 2022
Role: Teaching Assistant
Responsibilities: Held weekly office hours, and contributed to grading and feedback.

Social Media & Mobile Tech [University of Windsor] Winter 2022
Role: Teaching Assistant
Responsibilities: Held weekly office hours, and contributed to grading and feedback.

NOTABLE PROJECTS

. *Simulink-Style Data Preprocessing Pipeline for ML:* Project to streamline the ML data pre-processing pipeline for ML algortihms.

. *Implementation of Hierarchical Graph Pooling:* Re-implementation of the Hierarchical Graph Pooling with Structure Learning paper.

. *Analysis of the Google Landmark Competition 2021:* Designed a Shifted Window Transformer model to tackle the largest Google Landmark dataset.

. *Exploring Efficiency Amonst Supervised Models:* Research paper on supervised learning models and their accuracy on a chosen MNIST dataset.

. *Comparative Analysis of Convolutional Neural Network Architectures:* Research paper on convolutional neural networks and comparison to other models using an MNIST dataset.

. *Exploring optimization strategies with the prisoner's dilemma:* Research paper on exploring different strategies for the prisoner's dilemma game.

ACHIEVEMENTS

Summer 2023

Gold LEAD Medallion, awarded by University of Windsor *July 2023*

SKILLS

Working Knowledge	Python, C/C++, PyTorch, Numpy, Pandas, Tensorflow
Intermediate Knowledge	SKLearn, Java, JavaScript, SQL
Languages	English (Native), Urdu

HOBBIES

Reading	I read a variety of genres but usually stick to classic literature. Some notable authors I particularly like are Dostoevsky, Cervantes, and Tolstoy.
Art	In my spare time, I try my best to make art, using oil pastels or ink.
Music	I enjoy playing classical music such as Beethoven and Rachmaninoff on the violin and piano.