Reza Namazi

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Education

McMaster University — Hamilton, ON, Canada
M.A.Sc. in Computational Science and Engineering, supervised by Dr. H. Mahyar, GPA: 4/4 — Sept. 2022–Present

Sharif University of Technology - Kish International Campus — Kish, Iran
B.Sc. in Computer Engineering, GPA: 17.78/20 (3.83/4.0) — 2017–2022

Selected Courses

- Deep Learning 4/4
- Foundations of Modern Scientific Programming (C/C++) 4/4
- Artificial Intelligence 19.8/20
- Complex Dynamic Networks 17.5/20
- Engineering Probability and Statistics 17.7/20
- Advanced Programming 19/20
- Numerical Computations 19.3/20
- Computer Simulation 19.2/20

Research Interests

- **Graph Representation Learning**
- **Natural Language Processing**
- **Data Mining**
- **Reinforcement Learning**

Awards and Honors

- Vector Scholarship in Artificial Intelligence Recipient 2022-23
- Ranked within the top 5% among B.Sc. Computer Engineering students
- Distinguished student in Computer Engineering Department

Research Experience

- Research Assistant, MahyarLab, McMaster University, Hamilton, ON, Canada — 2021-present
  Remotely working as a research assistant in Dr. Hamidreza Mahyar's lab on scalable and distributed graph representation learning using graph neural networks
- Multi-grid Project, Sharif University of Technology, Kish International Campus — 2020
  Using traditional methods, it is computationally expensive to solve large sparse linear systems of equations. To address this issue, multi-grid methods are employed. We did research on applying graph representation learning methods to multi-grid solvers.

Publications and Pre-prints

[1] **R. Namazi**, E. Ghalebi, S. Williamson, and H. Mahyar, *SMGRL: A Scalable Multi-resolution Graph Representation Learning Framework*, Code: https://github.com/rezanmz/SMGRL, 2022. arXiv: 2201.12670.

[2] **R. Namazi**, A. Zolanvari, M. Sani, and S. A. A. G. Ghahramani, *GL-Coarsener: A Graph representation learning framework to construct coarse grid hierarchy for AMG solvers*, Code: https://github.com/rezanmz/GL-Coarsener, 2020. arXiv: 2011.09994.

Projects

- Graph Neural Network Architecture Search
  This project's purpose is to optimise hyper-parameter tuning of graph neural networks in a large search space. To speed up the process, we first search a low-resolution version of the training graph, then increase the network's quality on a zoomed-in version of the same graph. The search is done using Optuna. Code available at https://github.com/rezanmz/GNN-NAS
- Molecule generation using Graph Convolutional Network (GCN)
  Using GCN in a GAN-like setting, I trained a generative model that outputs the structure of molecules similar to the seen training data. Code available at https://github.com/rezanmz/MolGenerator
- K-Means clustering from scratch with automatic selection of K
  I have implemented the K-Means clustering algorithm from scratch in C++. I also utilized the Elbow method to automatically select the best number of clusters. Code available at https://github.com/rezanmz/kmeans-cpp
- Modeling Epidemics
  In this project I tried to analyze an epidemic with infection rate α and recovery rate β in an SIS (Susceptible - Infected - Susceptible) model.
- A naive implementation of a two-grid multigrid algorithm
  Solve very large sparse linear systems using a Python and C++ implementation of the multigrid algorithm.
  Python code available at https://github.com/rezanmz/AMG
  C++ code available at https://github.com/rezanmz/multigrid

Teaching Experience

- **Teaching Assistant** at McMaster University — Winter 2024
  Introduction to Computational Natural Language Processing (SEP 775)
  Holding office hours, designing and grading assignments and final project
- **Teaching Assistant** at McMaster University — Winter 2024
  Introduction to Mathematical Scientific Computation (MATH 1MP3)
  Grading
- **Teaching Assistant** at McMaster University — Fall 2023
  Engineering Mathematics (Math 1ZC3)
  MATLAB Labs
- **Teaching Assistant** at McMaster University — Winter 2023
  Cyber Physical Systems (SEP 769)
  Holding office hours, designing and grading assignments and final project
- **Teaching Assistant** at McMaster University — Winter 2023
  Deep Learning (SEP 740)
  Holding office hours, designing and grading assignments and final project
- **Teaching Assistant** at McMaster University — September 2022
  Artificial Intelligence and Machine Learning (SMRTTECH 4AI3)
  Holding office hours, grading assignments and final project

Work Experience

- Machine Learning Associate, Vector Institute / Ethical AI, Toronto, ON, Canada Jan 2024-Present
  Developing forecasting models for EthicalAI to optimize forecasting algorithms contributing to improved demand and risk management solutions
- Research Intern, BASF SE, Mississauga, ON, Canada Jan 2023-Present
  - Engaged in data-driven projects, focusing on analytics and predictive modeling as a member of the Generative AI team
  - Contributed to AI application development and pattern analysis in complex data sets

Skills

- **Programming Languages:** Python, C++
- **Machine Learning Frameworks:** Tensorflow, Keras, PyTorch
- **Others:** git, Linux, Docker, LaTeX

Languages

- **Persian:** Native
- **English:** Professional Proficiency

References

Available upon request