

Hirad Daneshvar

PH.D. CANDIDATE IN COMPUTER ENGINEERING

Ottawa, ON, Canada

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Summary

- Working on Applied Deep Learning with Hamilton Health Sciences (HHS)
- Worked individually and in teams as a full-stack/back-end developer
- Served as web development team lead
- 8+ years of programming experience with Python, PHP, JavaScript, etc.
- 4+ years of applied AI experience, applying machine/deep learning methods to real-world problems, such as health
- 6+ years of experience with SQL and NoSQL databases
- Experience in recommendation systems, especially in movie recommendation
- Open to relocation
- Permanent Resident (PR) of Canada

Work Experience

Toronto Metropolitan University

Toronto, ON, Canada

RESEARCH ASSISTANT (PH.D. CANDIDATE)

Jan. 2021 - Current

- Conducting research on Applications of Deep Learning in Mental Health.
- Conducting research on Graph Neural Networks and their applications, especially in the healthcare domain.
- Conducting research on confidence calibration and uncertainty quantification of deep learning classifiers.
- Conducting research on utilizing heterogeneous data from multiple sources.
- Developing an AI solution in Python (PyTorch) for mental health service utilization.

Payrad Smart Solutions

Tehran, Iran

SOFTWARE DEVELOPER

Jul. 2020 - Mar. 2021

- Developed databases using MySQL in a FinTech-related startup.
- Developed and maintained web applications back-end using PHP/NodeJS and the Laravel/NestJS Framework to help speed up wage payments.
- Developed a subsystem for a freight and logistics management system.

Fanap Plus

Tehran, Iran

SOFTWARE DEVELOPER

Sep. 2018 - Jul. 2020

- Developed databases using MySQL and MongoDB.
- Developed and maintained web applications back-end using PHP and Laravel Framework.
- Developed and maintained web applications related to soccer match prediction and mobile top-up purchases.

Noghtechin Studio

Tehran, Iran

SOFTWARE DEVELOPER (FREELANCE)

Apr. 2018 - Sep. 2020

- Analysed, designed, developed and maintained web applications back-end Using PHP (Yii 2.x and Laravel Frameworks) and Python (Flask Framework for Rest APIs).
- Developed Databases Using MySQL, MongoDB, and PostgreSQL.
- Developed solutions for small startups in on-demand learning platforms, e-commerce systems, etc.

Mandegar System

Tehran, Iran

SOFTWARE DEVELOPER

Jul. 2013 - Apr. 2018

- Analysed, designed, developed and maintained web applications back-end using PHP, Yii Framework.
- Developed databases using MySQL and MongoDB.
- Designed and developed an e-commerce system with features such as dynamic product fields.

Teaching Experience

Toronto Metropolitan University

Toronto, ON, Canada

CONTRACT LECTURER

May 2024 - current

- Software Design and Architecture Course (COE692) - Teaching different architectural styles
- Software Systems Course (COE318) - Teaching OOP in Java

Carleton University

Ottawa, ON, Canada

CONTRACT INSTRUCTOR

Sep. 2024 - Dec. 2024

- Web and Mobile Software Development Course (EGEN 5206) - Teaching JavaScript for back-end, front-end, mobile and MongoDB

Toronto Metropolitan University

Toronto, ON, Canada

TEACHING ASSISTANT

Sep. 2021 - Apr. 2024

- Software Systems Lab (COE318). (Fall 2023, Fall 2022, Fall 2021)
- Algorithms and Data Structures Lab (COE428). (Winter 2024, Spring/Summer 2023, Winter 2023, Spring/Summer 2022, Winter 2022)

Education

Toronto Metropolitan University

PH.D. IN COMPUTER ENGINEERING (GPA: 3.92 OUT OF 4.33)

Toronto, ON, Canada

Jan. 2021 - Present (Mar. 2025)

- Member of Trustworthy AI Research Lab (TAILab)
- Research Focus: Applied Deep Learning in Mental Health Outcome Prediction, Collaborating with Hamilton Health Sciences (HHS)

Islamic Azad University - Central Tehran Branch

M.SC. IN COMPUTER ENGINEERING (GPA: 17.70 OUT OF 20)

Tehran, Iran

Sep. 2016 - Sep. 2020

- Thesis Title: A Social Hybrid Recommendation System using LSTM and CNN (Published Paper)

Islamic Azad University - Central Tehran Branch

BS IN COMPUTER ENGINEERING (GPA: 17.28 OUT OF 20)

Tehran, Iran

Sep. 2010 - Jan. 2016

- Project: Design and Development of an Online Learning System

Academic Research & Projects

- Current **Deep Learning Models in Mental Health Service Utilization**, A deep learning approach to use data from multiple sources for early prediction of mental health emergency department visits
- Apr. 2022 **Ontology Alignment**, Design and implementation of an ontology alignment system using Graph AutoEncoder and multiple classifiers, implemented in Python and Pytorch (Intelligent Systems Course Project) - [Link](#)
- Dec. 2021 **Hybrid Movie Recommendation System**, Design and implementation of a movie recommendation system using AutoEncoder, K-Means Clustering, and KD-Tree, implemented in Python and Pytorch (Knowledge Discovery Course Project) - [Link](#)
- Jan. 2016 **Online Learning System**, Design, implementation and database development of an online learning system. Implemented in Php (Yii Framework) and MySQL (BSc final project)

Publications

- 2024 **Daneshvar H., Boursalie O., Samavi R., Doyle T., Duncan L., Pires P., Sassi R.**, "SOK: Application of Machine Learning Models in Child and Youth Mental Health Decision-Making" Artificial Intelligence for Medicine [Link](#). (Status: Published)
- 2024 **Saggu, S., Daneshvar, H., Samavi, R., Pires, P., Sassi, R.B., Doyle, T.E., Zhao, J., Mauluddin, A., Duncan, L.**, "Prediction of Emergency Department Revisits among Child and Youth Mental Health Outpatients Using Deep Learning Techniques" BMC Medical Informatics and Decision Making [Link](#). (Status: Published)
- 2022 **Daneshvar H. and Ravanmehr R.**, "A Social Hybrid Recommendation System using LSTM and CNN" Concurrency and Computation: Practice and Experience [Link](#). (Status: Published)

Reviewed Conference Proceedings

GCE: Confidence Calibration Error for Improved Trustworthiness of Graph Neural Networks

Guelph, ON, Canada

PRESENTED AT THE <CANADIAN CONFERENCE ON ARTIFICIAL INTELLIGENCE>

May 2024

- Authors: Daneshvar H., Samavi R.
- Conference Proceedings: Hiran Daneshvar and Reza Samavi. "GCE: Confidence Calibration Error for Improved Trustworthiness of Graph Neural Networks" Proceedings of the 37th Canadian Conference on Artificial Intelligence, May 27, 2024 ([Link](#))

Heterogeneous Patient Graph Embedding in Readmission Prediction

Toronto, ON, Canada

PRESENTED AT THE <CANADIAN CONFERENCE ON ARTIFICIAL INTELLIGENCE>

Jun. 2022

- Authors: Daneshvar H., Samavi R.
- Link to Talk: [Link](#).
- Conference Proceedings: Hiran Daneshvar and Reza Samavi. "Heterogeneous Patient Graph Embedding in Readmission Prediction" Proceedings of the 35th Canadian Conference on Artificial Intelligence, May 27, 2022 ([Link](#))

Presentations

GCE: Confidence Calibration Error for Improved Trustworthiness of GNNs

Toronto, ON, Canada

PRESENTED AT <VECTOR INSTITUTE ML SECURITY & PRIVACY WORKSHOP>

Jul. 2024

- Authors: Daneshvar H., Samavi R.

Graph Data Fusion to Predict Emergency Department Visit within 180-Days

Ottawa, ON, Canada

PRESENTED AT <PRECISION CHILD AND YOUTH MENTAL HEALTH CONFERENCE>

Jun. 2024

- Authors: Daneshvar H., Zhao J., Mauluddin A., Duncan L., Pires P., Sassi R., Samavi R., Doyle T.

GNN in 30-Day ED Prediction for Child/Youth

PRESENTED AT <PRECISION CHILD AND YOUTH MENTAL HEALTH CONFERENCE>

- Authors: Daneshvar H., Saggu, S., Zhao J., Mauluddin A., Duncan L., Pires P., Sassi R., Samavi R., Doyle T.

Ottawa, ON, Canada

Jun. 2024

Confidence Calibration Loss for Graph Neural Networks

PRESENTED AT <VECTOR INSTITUTE RESEARCH SYMPOSIUM POSTER PRESENTATION>

- Authors: Daneshvar H., Samavi R.

Toronto, ON, Canada

Feb. 2024

Predicting Child and Youth Mental Health Service Use with Deep Learning Models

PRESENTED AT <CANADIAN PSYCHIATRIC ASSOCIATION ANNUAL CONFERENCE>

- Authors: Daneshvar H., Rashidiani S., Zhao J., Mauluddin A., Boursalie O., Duncan L., Pires P., Sassi R., Samavi R., Doyle T.

Vancouver, BC, Canada

Oct. 2023

Questionnaire Graph Embedding for Early Prediction of Mental Health Emergency

Department Admission

PRESENTED AT <VECTOR INSTITUTE RESEARCH SYMPOSIUM POSTER PRESENTATION>

- Authors: Daneshvar H., Samavi R.

Toronto, ON, Canada

Feb. 2023

Using Graph Neural Networks in Mental Health Service Utilization

PRESENTED AT <VECTOR INSTITUTE RESEARCH SYMPOSIUM POSTER PRESENTATION>

- Authors: Daneshvar H., Samavi R.

Toronto, ON, Canada

Feb. 2022

Skills and Languages

- **Programming Languages and Tools:** Python, PyTorch, PyTorch Geometric, JavaScript, NodeJS, Php, Java (Basic), C (Basic), git
- **Operating Systems:** macOS, Linux
- **Databases:** MySQL/PostgreSQL, MongoDB
- **Languages:** English (Professional Proficiency), French (Basic), Persian (Native)