

Hassan Hamidi

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PhD of Computer Science

York University

Sep. 2023 - Present

Research Area: Diffusion Models, Debiasing, Medical Imaging, Computer Vision

Master of Science in Artificial Intelligence

Sharif University of Technology

Sep. 2020 - July 2023

- ◆ GPA: **19.1** out of **20**
- ◆ Master's thesis

Thesis Title: Multi-Modal Knowledge Distillation for Point Cloud Semantic Segmentation

Thesis description: Developed a new knowledge distillation method to address the scarcity of 3D data (point cloud). A multimodal teacher model guided a student point cloud model by distilling geometric and camera information to student. This framework improved the base model's MIoU by 6%, with notable gains in challenging classes.

Bachelor of Science in Computer Engineering

Semnan University

Sep. 2016 - Sep. 2020

- ◆ GPA: **17.1** out of **20**
- ◆ **Project Title:** Implementing license plates detection system using YOLOv3 and OpenCV.

Technical Skills

Programming Languages:

Proficient: Python; Intermediate: SQL, JavaScript, PHP, C++, MATLAB.

Libraries:

PyTorch, PyTorch Lightning, Diffusers, Accelerate, Hugging Face, NumPy, Pandas, Scikit-Learn, PyTorch Geometric, Open3D.

Developer Tools:

VS Code, Linux, Git.

Publications

- ◇ Representation is all you need: Performance and fairness analysis of vector embedding Chest X-ray representations (Submitted to MLHC)
- ◇ Point Cloud Knowledge Distillation in Image Latent Space (Under Preparation)

Honors and Awards

- ◇ Awarded the **\$40,000** VISTA scholarship
- ◇ Ranked **9th** among over 16,000 graduate applicants in the National University Entrance Exam for M.Sc. of Computer Engineering.

Teacher Assistant

- ◇ Machine Learning (Jan 2024)
- ◇ Image Processing (Jan 2022)
- ◇ Machine Learning (Head TA) (Sep 2021)
- ◇ 3D Computer Vision (presenter TA) (Sep 2021)
- ◇ Artificial Intelligence (Sep 2019)
- ◇ Digital Design (Sep 2018)

Projects

LLM-based Recommender System (Data Mining Course Project)

Jan 2024

This is a two-stage recommendation system: the first stage generates embeddings for products, and the second stage uses a transformer-based model to predict and recommend product embeddings.

<https://github.com/ahmadsalimi/LLM-recom>

Automated important news detection (NLP course project)

March 2022

Description: I collected a dataset and labeled it according to the majority vote in a selected team. Next, I customized and trained algorithms such as BERT, BiLSTM, Robert, and SVM to identify the important news. I handled unbalanced data using sampling, upsampling, and loss weighting approaches. The results show 67% accuracy which is close to human performance. <https://github.com/hahamidi/NLP-AI1400-master>

PointCNN Segmentation model

June 2022

Description: In this project, I contributed to the PointCNN segmentation model by implementing the model in Pytorch. I used Pytorch Geometric layers which are lightweight and fast. According to results, the model is able to scale up dynamically to more than 30M parameters on a regular GPU. <https://github.com/hahamidi/pointcnn>

Improving PLELog paper (DSSE course project)

Oct 2021

I improved the model of the PLELog paper, which proposed a log anomaly detection method. I redesigned the encoder and clustering modules. The results show an improvement in the F1 metric from 96% to 98%.

https://github.com/hahamidi/PLELog_improved

Other Projects

Description:

- ◇ Create panorama image: key points were detected by the Harris corner detection then key points were matched by the SIFT at the end images were stuck together by Homography and Fundamental matrices
- ◇ Persian autocomplete: using Albert for predicting the rest of the sentence.
- ◇ Point2Point (generative model for Point Cloud colorization and segmentation)