SAEEDE HASANPOOR

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WORK EXPERIENCE

Research Assistant

ML Research Assistant

Jan 2020 – Jun 2021 | University of Toronto, Canada

Project: Convolutional Neural Architecture Search

- Applied evolutionary algorithms to search for the best convolutional neural network architecture for CIFAR10 classification

Project: Physics Informed Neural Networks

- Conducted literature review in the field of physics informed neural networks PINNs and implemented PINNs to predict flow field around a cylinder.

Research and Development Intern

R&D Electronics

Sep 2023 - Dec 2023 | Ansys, Canada

- Conducted research on the mixture of expert (MOE) techniques and trained multiple compact thermal models (CTMs) using MOE to improve temperature prediction accuracy.

Teaching Assistant

Course : Introduction to Data Science and Analytics

Sep 2022 –Present | University of Toronto, Canada

Course : Applied Fundamental of Deep Learning

Jan 2023 –Present | University of Toronto, Canada

- Helping students to implement different machine learning algorithms and giving tutorials on Machine learning methods

RELEVANT COURSEWORK

Intro to Data Science and Analytics

University of Toronto

Acquired skills in data cleaning, visualization, statistical analysis, and machine learning through hands-on projects utilizing Python

Intro to Deep Learning

University of Toronto

I implemented a wide range of deep learning algorithms including Neural Networks, Convolution Neural Networks, Generative Adversarial Networks and more through hands-on assignments and projects.

PUBLICATIONS

Predicting Wind Farm Wake Losses with Deep Convolutional Hierarchical Encoder-Decoder Neural Networks

APL Machine Learning

Jan 2024

Integrating Analytical Wake Models and CFD Simulations Through a Machine Learning-Based Surrogate Model for Efficient Flow Field Predictions in Wind Farms

CSME Conference

May 2024

EDUCATION

Ph.D of Mechanical Engineering

University of Toronto

Sep 2021 – Dec 2025

Thesis: Developing an ML Model-based Surrogate Model for Wind Farm Layout Optimization.

MASc of Mechanical Engineering

Amirkabir University of Technology

Thesis: Vehicle Gearbox Fault Detection using Machine Learning Methods

PROJECTS

Wake Modeling Based on Convolutional Autoencoders for Wind Farm Layout Optimization

- This is my PhD research, and so far, we have developed a machine learning model capable of predicting flow fields in wind farms. This model serves as a surrogate for wind farm layout optimization.

Histology Image Classification and Segmentation

- We implemented the Mask-R-CNN model in PyTorch to detect and instantiate different types of nuclei within histology images. We used ResNet and AlexNet in the model's backbone to extract the features.

Vehicle Gearbox Fault Detection using ML Models

- We collect real-time data experimentally by accelerometers which are located in different locations on the gearbox body
- Support vector machine and signal processing methods are used to extract features and classify the gearbox faults

Knowledge distillation for Classification Tasks

- We explore the use of different techniques for distilling the knowledge from a pre-trained model and applying it to a smaller model to improve the performance of the smaller model while reducing its computational requirements.

SKILLS

- **Python, PyTorch** ●●●●○
- **C, Matlab,Simulink** ●●●●○
- **TensorFlow, Keras** ●●●○○
- **Teamwork, Project Management, Leadership** ●●●●○

LANGUAGES

- **English** ●●●●○
- **Turkish** ●●●●○
- **Persian** ●●●●●