

Aryan Garg

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Education

Eindhoven University of Technology (TU/e)

Eindhoven, The Netherlands

BSc Computer Science and Engineering

Sept 2020 - July 2024

- **Relevant Coursework:** Machine Learning - Foundations of Machine learning algorithms, Responsible Data Science - Interpretability & Explanation of models
- **Other Coursework:** Data Structure & Algorithms, Programming, Programming Methods (Design Patterns & TDD), Software Specification, DBL Webtech, DBL App Development, Computer Networks and Security.
- **GPA:** 7.4

Projects

Development of an Explainable Model for ICU Mortality Prediction

Eindhoven, The Netherlands

Eindhoven University of Technology

Feb 2023 - Apr 2023

- Developed a model to predict mortality of patients in ICU longer than 24 hours, based on the MIT GOSSIS dataset.
- Improved class imbalances in the dataset using SMOTE and resampling.
- Tested the performance of different models (RFs, GBDTs (XGBoost/LightGBM), Neural networks) on the dataset and selected the optimal model through empirical means (ROC AUC, Calibration plots)
- Used cross-validation and G-Mean to find an optimal threshold to achieve ~ 90% accuracy and a ROC AUC of ~ 0.93.
- Increased explainability of the model using LIME and SHAP methods, and fairness of the model using *fairlearn*.

Face Emotion Detector

Eindhoven, The Netherlands

Personal

Mar 2024 - Apr 2024

- Implemented AlexNet and VGGNet13 in Tensorflow, trained on the FER 2013 dataset to achieve ~ 53% and ~ 68% accuracy respectively.
- Developed a web application using React for front-end and Python for the back-end using FastAPI, exposing the models through a REST API.

Reproduction of Academic AI Papers

Eindhoven, The Netherlands

Personal

Sep 2023 - Nov 2023

- Fully implemented Generative Adversarial Networks from scratch based on the paper by Goodfellow et al in PyTorch and trained on the MNIST dataset.

Work Experience

Starnus Technology

Eindhoven, The Netherlands

Software Engineer

Jan 2021 - Present

- Developed an algorithm for the detection of a pallet in a warehouse setting from LIDAR data in Python and ROS2 using clustering algorithms. Optimized the runtime of the algorithm from 0.5s to ~ 0.00035s while maintaining pallet detection accuracy.
- Developed pallet entry detection algorithm using 3D PointCloud data and ROS2 to detect entry points for the robot to lift the pallet accurate to less than 0.5cm.
- Integral in developing the communication between a Warehouse Management system, the fleet manager of the robot based on ROS2, and the robot over WiFi, with all parts intercommunicating with each other. Communication system developed in Java (using Spring Boot) and also converted into Python.
- Developed a full-stack website for the company. Implemented Figma designs into web pages using the React framework. Integrated front-end with back-end based in Django. Increased traffic from 100 clicks per month to circa 3000 per month using SEO.
- **Technologies:** ROS2 (Humble), React, WebSockets, REST

Miscellaneous

Huawei Seeds for the Future

Rijkswijk, The Netherlands

Talent Program

Oct 2023 - Oct 2023

- Part of Top 50 students accepted for Huawei's Seeds for the Future program in the Netherlands. Invented a startup idea for tackling the issue of pollution in water for the Tech4Good program.

Skills

Programming Python (Pytorch, Tensorflow, Scikit-learn, Flask, HF), ROS2 (Python, C++), Java, JavaScript(React), HTML/CSS

Languages English (Native), Hindi (Native), Dutch (Full Professional Proficiency)