MEHAL AGARWAL

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EDUCATION

Carnegie Mellon University — **Pittsburgh, PA**
Master of Science in Electrical and Computer Engineering (AI/ML Systems) — *December 2024*
  Current Courses: Machine Learning, Data Analytics for Semiconductor Industry, ML for Signal Processing

Nanyang Technological University — **Singapore**
Bachelor of Engineering in Electrical and Electronic Engineering (Accelerated Program 3.5 years) — *December 2021*
  Honours (Highest Distinction), GPA **4.85 /5.00 (3.89/4.00)**
  3*Dean's Lists (2021 – 2022, 2020- 2021, 2019 - 2020)
  Lam Research Scholarship Award
  Specialization: Computer Engineering and Data Intelligence & Processing

SKILLS

Programming Languages: C++, C, Java, Python, JavaScript, HTML/CSS, MATLAB, SQL, SPARQL, PostgreSQL
ML Frameworks: TensorFlow, Keras, PyTorch
Tools: Docker, Git, Linux, Latex, OpenCV, Azure, Maven

WORK EXPERIENCE

Cambridge Center for Advanced Research and Education (University of Cambridge) — **Singapore**
Software Developer, advised by Prof. Markus Kraft — *February 2022 – July 2023*
- Devised and developed software tools to support digital twin development in cross-domain city-related applications in the WorldAvatar, a knowledge-graph (KG) based digital twin ecosystem.
- Developed a **knowledge graph embedding**-based Question Answering System for Chemistry, Marie and BERT which operates on multiple KG embedding spaces and uses a **BERT-based entity-linking** model. (The paper is under review at ACS Publications).
- Created an **object-graph mapping library** leveraging **Java** to provide a high-level, abstract, and object-oriented programming interface for automated manipulation of knowledge graph data, displacing the previous development paradigm of manual query composition for every application, thereby reducing manual processing time by **72%**.
- Designed and constructed a relational database access agent to handle HTTP requests to perform **PostgreSQL** operations automatically, improving the service access time by **48%**.

Enuit Pte. Ltd. — **Singapore**
Technology Analyst Intern — *June 2021 – August 2021*
- Completed an **automated test project** with automated test cases to ensure both projected and finalized broker commissions are calculated accurately for each financial instrument during its life cycle, improving the process by **54%**.

Seagate Singapore International Headquarters — **Singapore**
Machine Learning Intern — *February 2021 – June 2021*
- Collaborated with the Engineering Team to collect data from testers and used **Python** programming to analyze tester KPIV parameters. Built a dashboard to display the analysis results.
- Developed a methodology using ML models, such as **LSTM** and **XGBoost** to detect aberrant values and temporal shifts in time-series plots, thereby reducing manual investigation by **67%** and improving quality assurance protocols by **35%**.

Rolls Royce@NTU Corporate Lab — **Singapore**
Software Intern — *May 2020 – August 2020*
- Designed and developed a Graphical User Interface (GUI) and a data visualization platform for a microgrid sizing tool and aerospace power systems application using **MATLAB** App Design and Programming.

ACADEMIC PROJECTS / RESEARCH EXPERIENCE

Nanyang Technological University — **Singapore**
Key Frame Extraction from a Big Dataset (collaboration with Continental Automotive) — *January 2021 – December 2021*
- Developed an automatic keyframe filter package to extract useful sensor data for annotation required in autonomous driving; achieved by performing temporal 2-D multi-label tagging of images using state-of-the-art **Faster R-CNN**.
- Extended the model by adding a novel visibility detection feature for each object identified in the image.

A Data-Driven Land-Use Configuration to Improve Community Resilience — *August 2020 – November 2020*
- Applied supervised machine learning models and solved candidate site selection as a ranking problem.
- Implemented Linear Regression with Regularization, and Random Forest to predict key variables related to land usage.
- Implemented Learning to Rank: LambdaMart to evaluate the plots based on users' rating data gathered from Google Maps.

Web Application Design and Development — *August 2020 – November 2020*
- Developed a commercial web application for online purchase of electronics using HTML, CSS, JavaScript, PHP, and SQL.

Artificial Intelligence and Data Mining: Image Classification — *October 2021 – November 2021*
- Designed algorithms and used TensorFlow to perform Image classification on CIFAR-10 dataset.
- Utilized the Sequential API of Keras to construct a CNN model from scratch and applied transfer learning to construct a model with VGG-16 pre-trained feature extraction backbone, achieving an accuracy of **85%**.