Ambar Chakraborty

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TECHNICAL SKILLS

Languages: Python, Javascript, Typescript, Java, R, SQL, C, C++, MIPS, HTML, CSS
Libraries: Python – Keras, Django, Flask, Pytorch, Scikit-Learn, Matplotlib, Tensorflow, Dash
        Javascript – React, Node, Express, MongoDB, Material-UI
Tools: Git, Jira, Postman, Confluence, Tableau, Power BI

WORK EXPERIENCE

Data Analyst | Tensorflow, Keras, Pytorch, Flask, React, MongoDB   **Vaughan, Ontario**
Martinrea International Inc   May 2023 – Aug 2023
- Built a machine health monitoring system using **LSTM Variational Autoencoder Neural Networks**, using data from over 100 sensors, capable of **predicting** machine breakdowns weeks in advance
- Developed an **Extract Transform Load (ETL)** pipeline connecting three different sources of data, allowing more information to be used to make more precise statistical analysis
- Utilized **React** to develop a **web application** which provides real time alerts and visualize live machine data, allowing control engineers to respond promptly to potential machine failure
- Developed **backend of a data analysis software** capable of visualizing and summarizing machine health data based on user provided inputs
- Performed **Exploratory Data Analysis** on **time-series** data to recognize failure patterns, and used statistical tests such as **ANOVA test** and **moving averages** to detect machine fatigue and imbalance

Market Data Analyst | Python, SQL, Tableau   **Mississauga, Ontario**
Independent Electricity System Operator (IESO)   Sep 2022 – Dec 2022
- Built pipeline **connecting database to Excel** to schedule and automate daily report generation, saving 30 minutes of work daily
- Prepared data for running simulations to investigate potential market protocol violations and **predict market outcomes** under various constraints
- Developed a **population-weighted temperature metric** to help improve accuracy of electricity demand forecasts
- Revamped weekly reports by creating **new graphs in Tableau** to visualize and gain insight from **previously unused data**, and improve conciseness

PROJECTS

Better Call Paul
- Built a **personal AI lawyer** chatbot, with backend built using **Flask**, capable of providing legal advice, explaining laws and build defense strategy, trained on documents of provincial and federal laws
- Used Open AI **GPT-4 LLM** to train the model and **Langchain** to build pipeline between dataset and servers

Ask Me Anything
- Developed an application which trains a chatbot using **GPT-3 Large Language Model (LLM)** on user provided documents, allowing the user to ask any questions from the documents interactively
- Built backend using **Django**, adding user authentication

Trash Talk
- Developed an application educating users on waste segregation, allowing users to describe objects using text, speech, or images
- Built **Multi-class Classification Convolutional Neural Network (CNN)** using **Keras** to categorize images
- Trained **NLP model** to determine garbage category from vague descriptions

Second-Hand Bookstore
- Using **React**, designed a **RESTful API** allowing users to navigate and purchase books from an online store
- Designed a responsive webpage using **Material-UI** in the frontend
- Integrated application with **MongoDB** to allow user to perform **CRUD** operations

EDUCATION

Bachelor of Mathematics (Honors), 2026, University of Waterloo
*Double Major in **Statistics and Computational Mathematics***
Cumulative Percentage Score – 85.2 % (Dean's Honors List 2 X)
Extra curriculars – Actuarial Science Club (VPF Winter 2023), Mathsoc (Board of Director Fall 2021)