Maya Ravichandran

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Education

MPhil in Therapeutic Sciences – **University of Cambridge**, Trinity College — Fall 2022 – Summer 2023
MSc in Advanced Computer Science – **University of Oxford**, New College — Fall 2021 – Summer 2022
B.S. in Computer Science – **Rutgers University–New Brunswick** (GPA: 3.98/4.00) — Fall 2017 – Spring 2021

Experience

Apollo Therapeutics – **Business Development Intern** — Cambridge, UK — Spring 2023

MongoDB – **Software Engineering (Machine Learning) Intern** — New York, NY — Summer 2021

- Developed a machine learning model for the novel application of predicting database performance regressions based on code changes, using **Python, Pandas,** and **Scikit-learn**
- Achieved 0.88 accuracy and **0.91 ROC AUC score** with passive-aggressive model, surpassing team's expectations of a minimum accuracy of 0.75 for a viable proof of concept model
- Completed end-to-end machine learning development, including constructing a data pipeline integrating data from GitHub and a performance dataset, data preprocessing, feature engineering, and model prototyping and evaluation

MongoDB – **Software Engineering Intern** — New York, NY — Summer 2020

- Designed and implemented a **data pipeline** within MongoDB's distributed, open source continuous integration system
- Implemented pipeline in **Go** that logged system metrics from cloud hosts running test suites, streamed data to a data sink using **gRPC**, stored data using **MongoDB** and **Amazon AWS S3,** and made data accessible via **REST API** for diagnosis of system failures via machine learning and data visualization

Bank of America Merrill Lynch – **Sales and Trading Summer Analyst** — New York, NY — Summer 2019

Commvault – **Software Engineering Intern** — Tinton Falls, NJ — Summer 2018

- Designed and developed a **data pipeline** that collected user activity data and inputted it into **ARIMA** statistical prediction models using **C++** for intelligent scheduling of background activities to enhance system availability for customers

Commvault – **Software Engineering Intern** — Tinton Falls, NJ — Summer 2017

- To improve CI/CD workflow for in-house software development by ~**1,300 developers**, created a full-stack application that contained a dynamic web interface using **Angular**, Bootstrap, HTML, CSS, **Java**, and MS **SQL** Server

Research & Projects

University of Oxford – **Project: Generative AI / Graph Neural Networks**
GraphRNN Revisited: An Ablation Study and Extensions for Directed Acyclic Graphs (*arXiv paper link*)

- Reproduced the GraphRNN model for generating realistic graphs using **PyTorch**, achieving comparable performance on qualitative and quantitative metrics and further graph similarity metrics
- Developed **novel extension** to generate directed acyclic graphs utilizing a topological sort algorithm, achieving performance increase of **93%** on degree distribution metric compared to a variant of the base GraphRNN model
- Paper accepted to **NeurIPS 2023**: New Frontiers in Graph Learning workshop

University of Oxford – **Machine Learning Researcher** — Oxford, UK — Summer 2022

- Trained **natural language processing transformer** models (based on BERT architecture, **110M parameters**) and **support vector machine** (SVM) models on whole genome sequencing data to predict presence of Alzheimer's disease
- Using approach of SVM models applied to single nucleotide polymorphisms, achieved 0.65 ROC AUC

Rutgers University – **Project: Computer Vision / Transfer Learning**
Domain Adaptation of Convolutional Neural Networks for Diagnosis of COVID-19 Chest X-Rays (*GitHub link*)

- Improved accuracy of unsupervised learning model from 49.5% with fine-tuned ResNet model to 62.25% by applying transfer learning via domain adversarial neural networks to a dataset of viral pneumonia images, using **PyTorch**

National Institutes of Health – **Bioinformatics Researcher** — Bethesda, MD — Summer 2018

- Improved accuracy of probabilistic framework for discovery of structural variants (large-scale genome mutations) by eliminating false positives with machine learning, using **R**

Skills & Awards

Languages: Python, Java, C++, C, Go, JavaScript, TypeScript, R, HTML, CSS, LaTeX
Tools/Frameworks: PyTorch, Pandas, Scikit-learn, Angular, SQL, MongoDB, AWS, Unix, Git, GitHub
Awards: Marshall Scholar (full scholarship to Oxford & Cambridge), Presidential Scholar (full scholarship to Rutgers)