Maya Ravichandran

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Education

MPhil in Therapeutic Sciences – **University of Cambridge** – Cambridge, UK (Fall 2022 – Summer 2023)

- Marshall Scholar; Member of Trinity College

MSc in Advanced Computer Science – **University of Oxford** – Oxford, UK (Fall 2021 – Summer 2022)

- Marshall Scholar; Member of New College

B.S. in Computer Science – **Rutgers University–New Brunswick** – New Brunswick, NJ (Fall 2017 – Spring 2021)

- Presidential Scholar; Honors College Scholar; GPA: 3.98/4.00

Coursework: *Graduate* – Massive Data Mining, Machine Learning, Graph Neural Networks, Computational Biology; *Undergraduate* – Artificial Intelligence, Data Structures, Algorithms, Biochemistry, Organic Chemistry, Biology

Work Experience

Intern, **Apollo Therapeutics** – Cambridge, UK (Spring – Summer 2023)

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

- Utilized machine learning to predict whether a set of performance tests will have a performance regression given a set of code changes, achieving 0.88 accuracy and 0.91 ROC AUC score using passive-aggressive model
- Scraped commit and diff data from a GitHub repository, combined data with a performance dataset, and completed preprocessing and feature engineering, utilizing Python, Pandas, and Scikit-learn

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

- Created a data pipeline within the Evergreen open-source continuous integration (CI) system that logs system metrics on the hosts running the CI tests, transforms them into structured data, and stores them in the data sink for access via a REST API using Go, enabling diagnosis of system failures via machine learning and data visualization

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

- Designed and priced hedges using a custom basket of equities and an options collar
- Constructed five-year interest rate swap spreads to maximize revenue and minimize risk

Research Experience

MSc Dissertation Project**, University of Oxford** – Oxford, UK (Summer 2022)

- Title: Deep Learning for Alzheimer's Disease Genomics, supervised by Prof. Alejo Nevado-Holgado
- Applied transformer neural network models and support vector machine (SVM) models to whole genome sequencing data to predict presence of Alzheimer's disease
- Found a predictive signal with the SVM model on many single nucleotide polymorphisms within the genes

Research Intern**, National Cancer Institute, National Institutes of Health** – Bethesda, MD (Summer 2018)

- Identified structural variants in osteosarcoma genome sequences as targets for further research
- Improved accuracy of probabilistic framework for structural variant discovery by eliminating false positives with machine learning

Research Intern**, Princeton University** – Princeton, NJ (Summer 2016 – Winter 2017)

- Investigated the impact of sulfate attack on the atomic structure of eco-friendly, low-CO_2 alkali-activated cement
- Identified changes to atomic bonds in cement using X-ray diffraction methods and X-ray pair distribution function analysis on data from Advanced Photon Source particle accelerator at Argonne National Laboratory
- Wrote research paper and presented findings at multiple venues

Projects

Reproducing and Extending GraphRNN: Graph Recurrent Neural Networks for Generating Graphs

- Wrote code to reproduce the GraphRNN model, achieving comparable performance in generating graphs on both qualitative and quantitative metrics, and assessed model performance on additional graph similarity metrics
- Extended GraphRNN to directed graphs and implemented novel extension to generate directed acyclic graphs

Domain Adaptation* of *Convolutional Neural Networks for Diagnosis of COVID-19 Chest X-Rays

- Used domain adaptation to apply a model trained on viral pneumonia chest X-rays to diagnosis of COVID-19 chest X-rays, achieving 62.25% accuracy with unsupervised learning using domain-adversarial neural networks, compared to 49.50% accuracy of baseline model trained on the viral pneumonia dataset

Skills: Python, Java, JavaScript, C++, C, Go, TypeScript, R, Angular, HTML, CSS, SQL, MongoDB