


Charles Jacob Tan

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EDUCATION

HBSc, University of Toronto

Sep. 2016 – Apr. 2021

Statistics Specialist, Computer Science and Math Minor

Relevant Coursework: Methods of Data Analysis in **R**, Computational Statistics in **R**, Machine Learning and Data Mining in **Python**, Managing Databases with **SQL**, Multivariate Statistical Analysis in **R**

TECHNICAL SKILLS

Languages: Python, R, HTML/CSS, JavaScript, SQL, STATA, SAS, Bash

Technologies: VScode, PostgreSQL, MongoDB, MATLAB, Git, Jupyter, Microsoft Office

Communication: Fluent in English and Tagalog, Basic conversational Mandarin

WORK AND OTHER EXPERIENCE

COVID-19 Research Project | Research Assistant | University of Toronto

Dec. 2020 – Apr. 2021

- Worked alongside Professor Luai Al Labadi to carry out a **comparison study** to evaluate the predictive performance of various **Poisson regression models** on a **COVID cases/deaths time series dataset**
- Utilized **Python and R** to perform **hypothesis and goodness of fit tests** to determine which model consisting of various social/economic indicators best fit the **COVID-19 population trends** in U.S counties

Business Analyst (Data Analyst) Intern | Bell Canada

May 2020 – Aug. 2020

- Created a performance dashboard to monitor specific metrics of Bell's mobile app through the Plotly, Dash and Scikit-learn libraries on **Python**
- Integrated forecasting functionalities to predict the future of the mobile app's performance metrics through **SARIMAX, Recurrent Neural Network (RNN)** and other time series models
- Competed in the summer business case competition to pitch a new medium for distributing digital media content and conducted **A/B testing** to determine the best direction for content delivery

Kumon Math Instructor | Kumon Philippines | Taguig City, Philippines

Aug. 2012 – Apr. 2016

- Provided assistance in different levels of math ranging from basic arithmetic to advanced algebra to help develop student's critical thinking and problem-solving skills
- Marked and recorded homework in accordance with Kumon guidelines to aid in student feedback
- Provided exceptional teaching– Candidate for the **2014 Kumon Philippines Teaching Award**

PROJECTS

COVID Test Using Chest X-Ray Images

Jul. 2021 – Present

- Designing a [Web Application](#) for the Providence Hospital in Quezon City that utilizes the **VGG16 CNN** model to classify whether a visitor has COVID based on X-ray images of their posteroanterior (PA) chest view
- Working with the hospital's radiologists to regularly train the model with new SARS-COV-2 variant images
- Achieving an **accuracy of 70%** on hospital visitors and accelerated the check-in process time **by over 30%**

Bitcoin Price Forecasting and Analysis

Aug. 2021 – Sep. 2021

- Developed an LSTM time series model that aims to estimate Bitcoin prices for the coming month and has ultimately **achieved an MAE of \$1450 – 1500 USD** for the forecasted month
- Scraped Bitcoin Tweets and Market Cap metrics from past years to feature engineer and improve analysis
- Optimized hyperparameters by conducting a grid search which **decreased the RMSE of the model by 52%**

True Sight | Research and Development Head

Oct. 2019 – Dec. 2019

- Led a team of five to perform collection, entry and cleaning of data from over 350 surveyed U of T students
- Utilized **Python, Pandas, Scikit-learn, R**, Multivariate and Logistic Regression to establish relationships between eyesight prescription and university student work habits
- Prepared visualizations and **presented findings to professors of the Psychology department**