JUSTIN D'SOUZA

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TECHNICAL SKILLS

- **Languages:** C, C++, Python, R, Matlab, HTML/CSS, Java, JavaScript (Node.js), SQL
- **Libraries:** TensorFlow, Nervana Neon, Scikit-learn, Pandas, NumPy, SciPy, Matplotlib
- **Mathematics Concepts:** Linear Algebra, Advanced Calculus, Statistics, Stochastic Processes (self-learning)
- **Machine Learning Concepts:** Linear/Logistic Regression, Neural Networks, Support Vector Machines, Natural Language Processing (NLP), Deep Learning, Bayesian Statistics

WORK EXPERIENCE

Electronica AI – *Quantitative Developer Intern* (Part Time) May 2017 – present

- Developing and backtesting inter-day **mean reversion** and **trend following** trading strategies for equities.
- Applying machine learning algorithms such as **support vector machines** and **linear/logistic regression**, and performing **correlation analysis** to optimize strategies and identify trading signals.
- Researching and prototyping **Monte Carlo simulations** for option prices.

CI Investments Inc. – *Software Engineering Intern* Jan. – Apr. 2017

- Utilized **SQL**, **HTML/CSS**, and **Java** to create web applications for **security analysis** and **report automation**.
- Collaborated with traders and business analysts to enhance back-end data pipeline for improved performance.
- Took initiative to work on multiple projects and deal with urgent ad-hoc feature requests simultaneously.

Manulife / John Hancock – *Data Science Intern* May – Sept. 2016

- Researched and developed novel NLP algorithms to equip portfolio managers with intelligent augmentation tools.
- Utilized **Python** (Pandas, TensorFlow, various scikits) to build **word2vec skip-gram model** and **LSTM recurrent neural network** from scratch for enhanced financial text analysis of **10,000+** data files.
- Integrated **Natural Language Processing APIs** with Node.js and Python scripts to acquire financial text data and feed neural network for **sentiment analysis** and **topic clustering**.

PROJECTS

Flight Delay Predictor (github.com/jqdsouza/FlightDelayPredictor)

- Trained **~33,000** rows of test data sourced from the U.S. Bureau of Transportation Statistics to predict whether flights would arrive 15+ minutes after scheduled arrival time.
- Achieved **~80%** prediction accuracy with **logistic regression** model, but improved specificity metric by a **factor of 7** utilizing **random forest** algorithm.

VCommerce – Manulife / John Hancock (github.com/jqdsouza/VCommerce)

- Mobile application utilizing innovative Virtual Reality platform and integrating Manulife and CIBC's financial services and customer base to simplify big life decisions for millennials.
- **Led 3 interns** and generated design, business plan, and proof-of-concept from scratch.

Stock Market Simulator (github.com/jqdsouza/MLForTrading)

- Created market simulator which accepts trading orders and tracks a portfolio fund's **Sharpe ratio** and **cumulative returns** against those of S&P 500. Return on Investment of fund is **~7.9%**.
- Developed script which returns optimal allocations for a given set of stocks by optimizing for Sharpe ratio.

Discover (discover-beta.github.io)

- Android application which incorporates **predictive analytics** and a GPS navigation system to allow users to find social events tailored to their interests around them in real-time.
- Currently implementing **decision-tree learning** to bucket users into shared interest groups.

EDUCATION

Bachelor of Applied Science (B.A.Sc.) in Computer Engineering Sept. 2015 – May 2020
University of Waterloo