

# John Park

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## EDUCATION

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### York University

Jan 2019 – Oct 2023

*Double Honours Bachelor of Arts in Applied Mathematics, Economics*

*Toronto, Canada*

**Courses:** Data Analytics and Machine Learning, Data Structures and Algorithms, OOP, Advanced Statistics, PDE/ODEs, Mathematical Finance, Financial Economics, Macroeconomics, Econometrics, Time Series Analysis

## WORK EXPERIENCE

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### yuHacks 2022 Hackathon - Team Lead

Feb 2022

*York University*

*Toronto, Canada*

- Organized a Major League Hacking-partnered online hackathon for students at York University and Greater Toronto Area to create creative solutions based on United Nations 17 Sustainable Development Goals.
- Hosted fireside chats with York University alumni in Canadian Banking and Big Tech companies to speak about breaking into their respective industries for attending hackers.
- Provided data analytics insights and workshops for beginner hackers interested in integrating data analytics for their submissions.
- Organized over 150 hackers with 30 teams, raised \$5,000 CAD as prizes from sponsors, and maintained communications with future organizing teams to provide advice and legacy support.

### Google Developer Student Club - President

Jun 2021 – Jun 2022

*York University*

*Toronto, Canada*

- Led a student run university club at York University for students to engage and collaborate with each other using Google Cloud technologies and various frameworks of interest.
- Partnered with Google Developer Experts in Canada to co-host beginner workshops in data analytics methods using Python and Machine Learning libraries with simple data sets.
- Partnered with other computer science student clubs in York University to deliver guided workshops in various frameworks and languages.

### RBC Open Banking Challenge - Team Lead

Feb 2020 – Feb 2020

*York University*

*Toronto, Canada*

- Spearheaded a team of four in a competitive analysis project, focusing on the emerging trend of open banking within the Canadian financial sector. Employed advanced quantitative and qualitative research methods to dissect and understand industry dynamics.
- Developed comprehensive strategies addressing the challenges and opportunities of open banking. Articulated these strategies in persuasive presentations to a distinguished panel comprising senior executives from the Royal Bank of Canada and esteemed faculty from York University's Economics Department.
- Guided the team to achieve a position as finalists, ranking in the top 5 out of 20 competing teams.

### Club Infinity - VP Finance

May 2019 – July 2019

*York University*

*Toronto, Canada*

- Led the financial planning and bookkeeping for Club Infinity, York University's key student association for mathematics and statistics students, ensuring accurate and efficient management of funds.
- Developed and hosted a series of data analytics workshops, attended by over 15 students, which enhanced analytical skills and contributed to a 5% increase in club membership.
- Maintained the club financial reporting system, improving the transparency and efficiency of financial management within the club.

## PROJECTS

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### **Credit Card Fraud Detection with SMOTE Technique and kNN classifier | *Python, Tableau***

- Enhanced a k-Nearest Neighbors (kNN) classifier's accuracy for credit card fraud detection to 97% on a dataset of 284,807 transactions by applying the Synthetic Minority Oversampling Technique (SMOTE).
- Developed and normalized the classifier using Euclidean distance for accurate fraud predictions.
- Presented model performance and metrics across various k values through a comprehensive Tableau dashboard.

### **Dota 2 Match Predictor with Tensorflow and OpenDota API | *Python***

- Developed a Tensorflow-based neural network algorithm, achieving a 87% accuracy in predicting Dota 2 match outcomes using players' historical performance data.
- Extracted and transformed 250,000 player data points from the OpenDota API using Python, analyzing key metrics to identify player strengths and weaknesses against various heroes.
- Engineered an innovative recommendation system that enhanced team composition strategies to a user.

### **E-Commerce Customer Segmentation Analysis with RFM and K-Means Clustering | *R***

- Analyzed a 100,000-record Brazilian e-commerce dataset by leveraging SQL queries to aggregate customer transaction data; performed RFM (Recency, Frequency, Monetary Value) in R, identifying customer purchasing patterns for targeted marketing.
- Applied ggplot2 for data visualization and Exploratory Data Analysis; implemented K-Means clustering with the Elbow Method for optimal segmentation.
- Derived insights that guided tailored marketing strategies, presented findings with Power BI.

### **Monte Carlo Simulation for \$NVIDIA American Options Pricing | *Python***

- Performed ETL on options data by using interest rates and historical Nvidia American options data from the Chicago Board Options Exchange (CBOE), and executed Monte Carlo simulations ( $n = 1,000,000$ ) for each options listed between 01/01/2023 to 12/31/2023.
- Implemented a backtesting strategy for options trading to devise a strategic trading approach, focusing on selling overpriced options and purchasing underpriced options via Black Scholes model.

### **Data Visualization of MNIST Data via t-SNE with Early Exaggeration | *Python, R***

- Implemented t-SNE with Early Exaggeration Factor developed by Laurens van der Maaten and Geoffrey Hinton in Python and R.
- Used MNIST dataset and sklearn library to implement a t-SNE algorithm with varying early exaggeration factors to showcase efficacy of the exaggeration factor with Matplotlib library.
- Implemented the same algorithm on Iris dataset in R using Rtsne library to project 3D data into 2D for convenient data visualization.

### **Predictive Analysis of Soccer Outcomes Using Bet365 API | *Python***

- Developed a specialized project focusing on soccer, utilizing Python to interface with the Bet365 API for real-time soccer match data, including team stats, player performance, and betting odds.
- Applied ETL with Pandas and NumPy to emphasize feature engineering to highlight factors critical to match outcomes such as team form, head-to-head history, and player injuries.
- Constructed logistic regression and random forest classifiers to predict match results. Enhanced accuracy through cross-validation, achieving a 86% accuracy rate.

## TECHNICAL SKILLS

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**Languages:** Python, Java, MATLAB, R, SQL, Git, PowerBI, JavaScript, HTML, CSS, VBA

**Developer Tools:** Microsoft Azure, Tableau, Visual Studio Code, RStudio, Eclipse, Jupyter Notebook, LaTeX

**Libraries :** Numpy, Pandas, sklearn, Matplotlib, TensorFlow

**Other: :** Post Graduate Work Permit Holder (No Sponsorships Required)