PATEL, RAJ GAURANGBHAI

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EDUCATION

University of Toronto **Toronto, ON**
Master of Applied Science in Operations Research (Focus: Applied Machine Learning and Quantitative Finance) **2020-2022**

- Recipient of Vector Scholarship in Artificial Intelligence for 2020-21.

University of Toronto **Toronto, ON**
Bachelor of Science in Statistics and in Actuarial Mathematics (CGPA:3.9/4.0) **2016-2020**

- Relevant Coursework: Probabilistic Machine Learning I and II; Stochastic Processes; Stochastic Calculus for Asset Pricing; Bayesian Statistics; Mathematics of Investments; Derivatives Pricing; Data Analysis; Partial Differential Equations; Multivariable Calculus
- Relevant Projects: (1) Pricing American Options and analyzing the exercising boundary (2) Dynamic Time and Move based Delta-Gamma Hedging (3) Two factor Interest Rate Modelling for pricing of Bond Options and Swaptions

WORK EXPERIENCE

Graduate Researcher **Toronto, ON**
Dynamic Optimization and Reinforcement Learning Lab, University of Toronto **April 2020-Present**

- Worked on a Reinforcement Learning based Neural Net approach for pricing European Options.
- Developed a multi-layer neural net framework to solve the optimal stopping problem for pricing American Options.
- Leveraging that model to approximate the solution of a PDE/SDE with control to model high dimensional Systemic Risk.

Teaching Assistant, University of Toronto **Toronto, ON**

- ACT230: Mathematics of Finance **September, 2019-Present**
- RSM430: Fixed Income Securities

Undergraduate Researcher **Toronto, ON**
RiskLab, University of Toronto **January 2019-Apr 2020**

- Led a project on pricing of Asian Options using jump diffusion stochastic processes for Crypto data.
- Extract and preprocess data from different data sources & maintain them using MongoDB for different research endeavors.

Summer Analyst **Chicago, IL**
Milliman – Financial Risk Management **May 2019-August, 2019**

- Generated Trading Grids for traders to trade based on client firms' policies, their behaviour and change in Option Values.
- Performed Greek analysis in R to explain the movements in Option Values and Greeks to the clients on weekly basis.
- Created weekly Performance Attribution report for clients based on daily trades and their hedges made across the week.

Summer Analyst **Toronto, ON**
Manulife – Capital Management **May 2018- August 2018**

- Automated the existing functionality of LICAT (Life Insurance Capital Adequacy Test) infrastructure and reporting process for Interest Rate Risk using VBA and excel which allowed time saving of up to 8 hours/week for the team.
- Streamlined calculation & reporting for Future Tax Reserves using VBA, allowing time saving of up to 28 hours/quarter.

AWARDS AND HONORS

Vector Scholarship in AI: This scholarship recognizes promising AI talent in Ontario, Canada and supports the recruitment of top students to AI-related masters program.
Morneau Shepell Scholarship: Recognized by the Department of Statistical and Actuarial Sciences as the top undergraduate student for high academic merit and leadership contribution within the University.
Dean's List Scholar: Recognized for obtaining a cumulative GPA of 3.5 or higher in all academic years.
Chancellor's Academic Excellence Award: Awarded by the University for high academic achievement in all academic years.

SKILLS AND ACTIVITIES

Technical Skills: Python, R, MATLAB, SQL, Git, VBA, Microsoft Office
Activities: UofT Capital Markets Society, Table Tennis Club, University of Toronto Cricket Club, Financial Engineering Club.

- Captain: University of Toronto Cricket Team, representing the University at the Provincial Level
- Team Member: University of Toronto Table-Tennis Team, representing the University at Provincial Level.

Unique Feat: Record Holder in Asia Book of Records, India Book of Records and Limca Book of Records for fastest mental computation. Awarded an honorary doctorate by the conglomeration of record books across the globe for creating National and Asian Records and using similar abilities to promote Mathematics among students across India