

EDUCATION**UCLA ANDERSON SCHOOL OF MANAGEMENT**

Los Angeles, CA

Master of Financial Engineering (merit scholarship recipient)

September 2017 – December 2018

- Relevant Coursework – Derivatives, Statistical Arbitrage, Stochastic Calculus, Monte-Carlo, Econometrics & Machine Learning
- Priced derivatives using Binomial, Monte-Carlo with variance reduction techniques & Finite Difference methods in C++
- Fixed Income – Bond sensitivities, Curve bootstrapping, Term structure theory & models (simulation and calibration)
- Selected to Citadel SoCal Datathon – Day long data science competition that involved building statistical models using public datasets to provide relevant, actionable insights on sources and reasons of water pollution/contamination across the USA
- Applied Finance Project – High frequency market making signal generation in CME futures using Deep Learning (Python)
 - Project for RCM-X Alternatives, a market making/execution services firm based in Chicago
 - Feature engineering, tuning and training sequence based RNN (LSTM) and deep neural networks with limit order book data using Tensorflow to identify direction of price movements over seconds (5MM+ data points & 10+ GBs of data)
 - Achieved 16X improvement in running times by executing efficient, parallel data pipelines and leveraging GPU (CUDA) accelerated Tensorflow implementations on Amazon Web Services (AWS). **Improved average predictive accuracy by 5%**

INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Chennai, India

M.S. (Research) in Aerospace Engineering (Research Topic - Computational Fluid Dynamics)

August 2014 – September 2017

- Recipient of scholarship from Ministry of Human Resources and Development (MHRD)
- **Publication** – “DNS of High Temperature Effects on Compressible Isotropic Turbulence”, G. Ramanathan and S. Ghosh – 55th AIAA Aerospace Meetings, January 2017, Texas

ANNA UNIVERSITY

Chennai, India

B.E. in Mechanical Engineering

August 2009 – August 2013

- Summer Research Fellowship awarded to study Quantum Mechanics with Prof. Justin David at Indian Institute of Science

SKILLS / CERTIFICATIONS

- Numerical analysis, signal (alpha) generation & Optimization using statistical, time series & Machine Learning methods
- Python & packages, LaTeX, Fortran, C++, Spark, SQL, domain parallel programming (MPI) & functional knowledge of R
- Regression & Classification methods, Random Forests, Support Vector Machines, Boosting, Bagging, Markov Models

EXPERIENCE**JP MORGAN CHASE, CORPORATE AND INVESTMENT BANKING (CIB)**

New York City, USA

Quantitative Research Summer Associate – Rates (Market Risk)

June – September 2018

- VaR analysis on FX Forward Implied xccy curve for emerging markets using machine learning and statistical techniques
- Developed unique fractional differencing procedures to transform time series into forms suitable for VaR calculation
- Applied novel optimization algorithms, using Scipy, Pandas, Numpy & Statsmodels, to solve for differencing parameters
- Used Fourier mathematics to identify parameters that modify time series properties while minimizing information loss
- Conducted comparison of econometric and Support Vector Machine algorithms to identify regime shifts in time series

INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Chennai, India

Research Scholar – Fluid dynamics (using computational & numerical methods)

August 2014 – August 2017

- Implemented, with improvements to existing research, 3 unique ways of initializing a stochastic turbulent flow-field with application to the Navier-Stokes equations for a wide range of physical conditions
- Used Fast Fourier Transform (FFT) and Runge Kutta time stepping methods to develop a robust non-linear multidimensional PDE (Navier-Stokes) numerical solver from scratch in Fortran and enabled it to work over a wide range of physical conditions
- Designed and developed an innovative algorithm to compute parallel FFTs of three-dimensional functions
- Reduced running speed, by a factor of 60, of optimization and computation algorithms and implemented domain-level code parallelization using Message Passing Interface (MPI)
- Used two-point correlations & Fourier methods to compute dynamics of stochastic flows with applications to finance
- Computed statistical measures like skewness, kurtosis and used perturbation analysis to identify and explain occurrence of novel physical phenomena with applications in active flow control and atmospheric re-entry of aircrafts

MACHINE LEARNING PROJECTS (Implemented in Python)

- Implemented Support Vector Machine (SVM) & Decision Tree algorithms in Python to predict the direction of currency pairs' daily returns using factors such as Risk Reversal, CFTC positioning, REER etc.
- Developed a framework using Hidden Markov Model (HMM) to predict patterns in OHLC prices from historical equity data
- Implemented a novel methodology to discretize and categorize price data based on shapes that also accounts for transaction costs/slippage for application in classification-based Machine Learning trading algorithms