

Lead Data Scientist with diverse experience in executing data-driven solutions to increase the efficiency, accuracy and utility of internal data. Extensive experience in managing entire Data Science project life cycle involving all the phases of project including data acquisition, data wrangling, statistical modeling, data interpretation and data visualization for medium to large scale enterprise application.

**TECHNICAL & BUSINESS SKILLS:**

Technologies	Python 3.7.4, Java 2, R 3.6.1, SQL, C/C++
Python Modules	Numpy 1.17.3, Pandas 0.25.2, Matplotlib 3.1.1, SeaBorn 0.11.0, Scipy 1.3.1, Scikit-learn 0.21.3
Database	Hadoop, Hive/Big Data, Teradata, SQL Server, Oracle, Sybase, DB2
Visualization Tools	Tableau, Excel Modeling
Financial Tools	Bloomberg, Calypso, Murex, Aladdin
Business Intelligence	SSRS, SSIS, SSAS, DataRobot
IDE	Jupyter Notebook 6.0.1, Anaconda Spyder 3.3.6, PyCharm 2019.2.3, TOAD, SQL Developer, Github
SDLC Process	Agile Scrum, JIRA, UAT
Operating Systems	Unix, Windows, DOS
Regulation	Dodd Frank Act, Basel, Volcker Rule
Models & Analytics	Linear Regression Model, Support Vector Machine, K Nearest Neighbors, Principal Component Analysis, K Means Clustering, Model Validation, Descriptive, Diagnostic, Predictive, Prescriptive.
Data Science	Artificial Intelligence, Machine Learning Algorithms, Deep Learning, Statistical Analytics
Risk Management	Historical VaR, Monte Carlo VaR, Variance/CoVariance VaR, Stress Testing, Sensitivity Analysis PnL Attribution/Explained & Flow Risk/Greeks
Business Acumen	Fixed Income, Equity, FX, Commodity, Wealth Management

**EDUCATION:**

- Cornell University, Master in Business Administration, Finance.
- IIT Madras, B.S., Electronics and Communication Engineering.

**STATUS:** US Citizen

**ACADEMIC EXPERIENCE:**

- Served as Adjunct Professor at New York University, Rutgers University and University of Texas for undergraduate and postgraduate students for courses in Artificial Intelligence, Machine Learning, Supervised Learning, Unsupervised Learning, Statistics, Corporate Finance and Fixed Income Portfolio.

**PROFESSIONAL EXPERIENCE:**

**Verizon Wireless**  
**Senior Data Scientist**

**12/19 to present**

The Quality of Experience Score (QES) is the model to analyze the customer churn prediction and its impact in revenue that utilizes customer lifetime value (CLV). The QES model prediction is based on 3 main scores - customer's nature, company's quality and non-interactive score. QES was also used to forecast Net Promoter Score (NPS), which is the vital measure of company's performance.

- Developed QES models to forecast company's revenue using Python 3.7.4, PySpark, Hive, Hadoop. Used Logical Regression models using modules - SciKit-Learn, Pandas, NumPy, SciPy, Matplotlib to develop and calculate weight for various key performance indicators (KPI).
- Performed A/B Testing on customer churn model by defining the hypothesis, control and treatment group. Determined the amount of data to be collected by performing power analysis.
- Applied various Machine Learning Techniques like Regression & Natural Language Processing (NLP) to develop cost and revenue optimization for call deflections and company strategy planning.
- Recommended various strategies to enhance revenue and customer lifetime value (CLV) and confirmed the hypothesis by developing various models using Python, Hive, Hadoop before implementing the strategies in production.
- Developed Supervised Machine Learning techniques to predict NPS based on QES and Customer DNAs. Also postulated few null hypothesis and rejected null to accept the alternative hypothesis.
- Leveraging customer non interactive behavior to predict customer churn and developed various campaign models to enhance company revenue.

Environment: Python, PySpark, SciKit-Learn, NumPy, Pandas, Jupyter Notebook, Big Data, Hadoop, Teradata, Excel and Tableau.

**Morgan Stanley, NY (Synechron)**  
**Data Scientist**

**04/19 to 11/19**

The goal of this project is to develop customized fixed income reports for Morgan Stanley Mutual Funds and Separately Managed Accounts, which also targeted on cleansing various production issues faced during the process.

- Developed intricate algorithms based on deep-dive statistical analysis that were used to deepen relationships, strengthen longevity between Portfolio & Benchmark attributes.
- Developed models using Excel & Python 3.7.4 to validate the usability and integrity of Investment Management data. Performed Diagnostic Analytics utilizing drill-down data discovery, data mining and correlation techniques resulting in 80% increase in data accuracy of Benchmark attributes in both Mutual Funds & Separately Managed Accounts (SMA).
- Used Python modules Pandas, NumPy, SciPy, Matplotlib to develop and calculate individual securities NAV, DV01, Duration & then applied statistical principles to compute portfolio attributes.
- Applied various Machine Learning Techniques and developed predictive models like Linear Regression Model, Random Forest, Decision Trees, Stochastic Gradient Descent, K-Nearest Neighbors, etc.
- Evaluated performance breakdown of Portfolio and Benchmark and also confirmed weighted sum of returns of all securities are precise. Performed Statistical analysis to compute portfolio characteristics NAV, VaR, DV01, Durations for both Regular & Blended Benchmark by applying Machine Learning Ensemble - Bootstrap aggregation.
- Worked with Tableau developers to build dashboard to display performance of Mutual Funds & Separately Managed Accounts (SMA) in comparison with their regular and blend Benchmarks.

Environment: Python, NumPy, Pandas, Jupyter Notebook, Anaconda Spyder, DB2 Data warehouse, Sybase, Tableau, SQL Developer, Excel.

**Bank of New York Mellon, New York**  
**Vice President / Data Scientist**

**06/17 to 04/19**

This project aimed to enhance the Fixed Income Trading System by adding new features to the current application. Also to identify and resolve the gaps in the current production system.

- Analyzed Blackrock Market data daily feed for various risk attributes (DV01, Duration, Greeks, VaR, etc) for different fixed income products and also developed internal calculation engine using Machine Learning ensemble methods - Bagging using SQL & Python.
- Involved in all phases of data mining, data collection, data cleaning, to develop models, validation and visualization to perform gap analysis.
- Performed predictive analytics such as machine learning and data mining techniques to identify data gaps between Blackrock Aladdin trading system and SunGard's InTrader accounting systems and also implemented solutions to all complex business problems.
- Participated in all phases of Data Collection, Data Wrangling, Gap Analysis, Statistical Analysis, Model Training and Data Visualization.
- Developed Python application using Pandas, NumPy, SciPy, Matplotlib to develop various risk attributes, which would be used across various front office desk.
- Developed Excel/VBA model to generate Broker Commission report for Fixed Income products using Broker Commission Rate, Trade details and attributes from various systems.

Environment: SQL Server, Oracle PL/SQL, TOAD, Python, NumPy, Matplotlib, PyCharm, Aladdin, Excel.

**Bank of America, Jersey City**  
**Senior Quant Analyst**

**06/16 to 03/17**

This project aimed at integrating two systems and to bring the portfolios and attributes together. In the process faced various technical and business challenges which was overcome by adhering to standard industry practices.

- Conducted data regression analysis with Python PyTorch for relationship between market data and different internal model pricing. Achieved 42% more accurate pricing prediction.
- Involved in the development of Prime Brokerage Margin and Risk calculation of various Equity Derivative and OTC Products. Also analyzed data across various Hadoop Ecosystem (HDFS, MapReduce, HIVE and more).

- Involved in the integration of various systems into a platform. Fixed various issues and ascertained the right price for various products using Black Scholes Option Pricing model & Swap pricing using yield curves, finally also confirmed the same using Bloomberg market data.

Environment: Python, SQL Server, Oracle PL/SQL, HIVE, Excel, Predictive - Regression Models.

Deutsche Bank, New York  
Data Scientist

05/14 to 05/16

- Involved in high-frequency electronic trading challenges to solve business problems using data mining algorithms and also validate various high-frequency algorithmic model (P/E, Technical Analysis, Trading Attributes) in Trade Capture, Risk Reporting, and Performance.
- Involved in control and regulatory governance & execution of Volcker Rule compliance. Used predictive analysis such as machine learning and data mining techniques to study Volcker Metrics P&L attribution, CFTR, Rent-D, Inventory Aging and Inventory Turnover across equity trading desks.
- Involved in validation of production gaps in both Flow Risk (Greeks) & Market Risk (VaR) calculation for various asset class Equity, Derivative, FX and Fixed Income. Also provided solution to resolve the production challenge.
- Developed predictive analytics to price illiquid assets, utilizing Supervised Machine Learning techniques K-Nearest Neighbors and Linear Regression Model against available liquid assets and attributes.

Environment: Python, SQL Server, Oracle PL/SQL, Excel.

State Street Bank, Boston  
Senior Risk Analyst

07/12 to 05/14

- Worked on Calypso Bloomberg PSDL and SAPI setup for 16 currencies and also developed Zero Yield Curves, Basis curves, Double Bootstrap OIS curves in Calypso from Money Market, Futures & Swap and Basis underlying instruments.
- Worked on Calypso Front Office Setup of all instruments (Swap, Futures, FRA, NDF, Swaptions) and confirmed their pricing is in-line with other market data like Bloomberg, Super Derivatives.
- Developed Historical Stress Test and Value at Risk model in Calypso across 16 various currencies for Dodd Frank initiative with 2 CCPs - CME and LCH.
- Managed and guided a team of 4 members and also interacted with other downstream business, technical team to integrate across various systems.
- Actively involved in product design & modeling from construction of curves, pricing of all FX, Equity, and Fixed Income products. Also alert trading desks & senior management of potential risk changes (Historic VaR, Margin Calculation) after significant events.

Environment: SQL Server, Descriptive Analytics, Calypso, Java, Excel.

Chicago Mercantile Exchange, Chicago  
Senior Analyst / Model Validation

11/11 to 06/12

- Performed Descriptive Analytics to Calculate VaR / Margin using Calypso ERS process and confirmed it's matching against existing Matlab Model. Also prototyped/configured Hypothetical PnL, Back testing, Delta Ladder in CME environment.
- Developed USD, EUR, GBP, JPY, AUD - Zero Yield Curves & Basis curves in Calypso from Money Market, Futures & Swap and Basis instruments. Also confirmed swap NPV are on curve point by performing round trip pricing.
- Created gap analysis document containing the gaps and presented clients with few solutions with their pros and cons. Also managed and guided a team of 3 members.
- Discussed with clients to identify and gather central counterparty (CCP) clearing customer requirements. Analyzed the OTC clearing business requirement and presented solution and design plan to client.
- Created User Acceptance Test Plans for Trade life cycle and ERS Historic VaR/Margin Calculation prior to the start of UAT.

Environment: SQL Server, Descriptive Analytics - Historical VaR, Calypso, Java, Excel.

TD Securities, New York  
Vice President / Swap Trader

03/10 to 10/11

- Developed various financial Excel models for different trading strategies - PCA Analysis, Rich & Cheap on US Treasuries, Regression Models. Also applied Machine Learning techniques with Fourier Transform on various periodic price curves.

- Involved in the trading of both client flow trades and prop trades of Cash and OTC products –Interest Rate Swap (Vanilla, Basis, OIS), FRA, Euro Dollar, Fed Funds and US Treasuries.
- Used Calypso, Murex & MarkitWire extensively to book all derivative from trade capture, pricing, valuation and if required for termination, novation etc.
- Developed Zero Yield Curves in Calypso based on market closing levels of Money Market, Futures & Swap/Bonds. Also confirmed swap par rates are in level to market values.

Environment: SQL Server, Descriptive Analytics, Calypso, Java, Excel.

**[NYPA, White Plains](#)**  
**[Financial Analyst](#)**

**[05/07 to 03/10](#)**

- Performed VaR calculation on swap portfolios, Delta-Normal VaR calculation for linear swap portfolio and Monte Carlo VaR for portfolio with optionality.
- Performed Predictive Analytics to price illiquid assets by utilizing Linear Regression Model against available liquid assets and attributes.
- Developed models for pricing of swap and determining intrinsic and time value exposure, determine total counterparty exposure by netting against ISDA agreement, also involved in the valuation of cap, floor and swaption.
- Built various models such as discounted cash flow, leveraged buyouts, operational and liquidation models using Excel, SQL Server.

**[New York Life, White Plains](#)**  
**[Business Systems Engineer](#)**

**[09/04 to 05/07](#)**

- Analyzed the business requirement and presented a development and design plan to the team for various fixed income, equity and commodity securities to hedge portfolio returns.
- Designed, developed and tested models to evaluate the Greeks, Sharpe Ratio across various NYLIFE Security portfolio using Monte Carlo Simulation, Excel, Java, Unix and Oracle PL/SQL.
- Recommended process improvements and shared best practice with the goal of improving and enhancing operational and reporting effectiveness and efficiency.
- Designed, developed and tested the financial application with C/C++, Java and Oracle PL/SQL.
- Collected, documented, and analyzed business requirements, clearly stating project scope, current process and proposed solutions with appropriate recommendations for system changes.

**LICENSES:**      Series 7, General Securities Representative Examination - Sep 2010.  
                         Series 63, Uniform Securities Agent State Law Examination - Nov 2010.