**Summary**

Experienced Quant and Data Science leader who has both the technical depth and management experience to lead a world class team and build machine learning based solutions to revolutionize the business.

**Key Skills**

* **Machine Learning**:
  + Supervised learning: Classification and Regressions
  + Unsupervised learning- Clustering and Principal Component Analysis
* **Programming**: Python, MapReduce, Apache Spark, Java, R, VBA (macros), Matlab
* **Database**: SQL, Hbase, Hive
* **Organization Development**: Attracting and recruiting talent, mentoring and coaching team members.
* **Other skills**: Derivative valuation, equity research, vendor databases e.g. Bloomberg/Reuters

**Professional Experience**

**Vice President/ Senior Data Scientist, Goldman Sachs, New York Aug 2016- Present**

* Led the development of high frequency trading market manipulation surveillances (e.g. spoofing, frontrunning) successfully within tight deadlines:
  + Used Hadoop infrastructure and MapReduce framework for equities, futures & option markets (using orders, executions and tick by tick market data)
  + These jobs process multi-billion row hbase tables in >100 terabyte data size
* Spearheaded researches on trade and quote data using Spark, Python, R and SQL (see last section)
* Mentored and coached junior team members on the adoption of various first-in-team technologies and best practices such as Hadoop and HBase unit testing, advanced MapReduce techniques and production engineering

**Manager, Financial Risk Management, KPMG, New York Feb 2013- Aug 2016**

* Derivative Valuation- Swaps, CDS, Convertible debt, Debt/ Loan with call/put rights
* Consultant at Goldman Sachs:
  + Led a team of consultants for designing & implementation of surveillances
  + Managed the account and generated over 6 million USD in revenue in 3 years through bringing resources to help client with independent assessment of risk and development of models

**Financial Engineer, PwC, New York Oct 2011- Jan 2013**

* Performed complex derivative valuation using Monte Carlo Simulations and closed form solutions:
  + Complex debt/ derivative instruments (with/without CVA)
  + Stock options, stock outperformance options
  + M&A transaction related contingent payments

**Summer Intern, Capstone Investment Advisors, New York May 2011- Oct 2011**

* Built and back-tested Realized, Forecast and Factor Models for Volatility (e.g. Garman Klass, Garch).
* Automated trading signal generation using above models to reduce reaction time to arbitrage implied vs predicted volatility.
* Employed vector autoregression/ principal components to factor macro-economic signals in volatility.

**Currency Analyst Intern, Forex Signs Inc., Wall Street, New York Nov 2010- May2011**

* Back-testing commonly used technical indicators using VBA, Metaquotes and Matlab

**Research Analyst, Thomson Reuters, Bangalore, India May 2008- Aug 2010**

* Performed analytics on economic and financial data to deliver insights for Reuters on-demand news (Reuter’s Insiders)
* Built detailed quantitative, financial and valuation models using Thomson Excel Add-Ins and VBA

**Senior Analyst, Copal Partners, New Delhi, India Feb 2007-May 2008**

* Created financial models to facilitate valuation sensitivity analysis on input assumptions, and for DCF and LBO valuations using SEC Filings, company websites and other data sources

**Educational Qualifications**

**Columbia University:** *MS in Operations Research*, New York, US **2010-2011**

**Army Institute of Management and Technology:** *MBA (Finance)*, Greater Noida, India  **2005-2007**

**National Institute of Technology:** *B. Tech. (Electronics and Telecomm.)*, Silchar, India **1999-2003**

**Certifications/ Other**

* Financial Risk Manager (GARP)
* Oracle Certified Java Associate (1Z0-808)
* National Stock Exchange of India’s Certifications (5 certifications completed)
* 800/800 in GRE Maths and 610/800 in GRE English.
* 94th Percentile in Bloomberg Aptitude Test
* Data Science Specialization – John’s Hopkins University (9 verified courses through Coursera)
* Divide and Conquer, Sorting and Searching and Randomized Algorithms – Stanford (verified Coursera)
* CS190.1x: Scalable Machine Learning - UC Berkeley (verified course through edx)

**Invited talks and other projects**

* Leveraging Big Data Analytics and Modeling for Financial Institutions Compliance: <http://datascience.columbia.edu/files/seasdepts/idse/pdf-files/I3-GS-102616.pdf>
* Academic Projects:
  + Algorithmic Trading: Using technical indicators for investing: Under guidance of Prof. Soulaymane Kachani (IEOR Columbia) and Prof. Arslan from MIT
  + Optimal Trading Strategy: Factor based investing under guidance of Prof. Mikhail Smirnov (Math Dept Columbia)
  + Market Neutral Pair Trading Statistical Arbitrage under guidance of Prof. Mikhail Smirnov (Math Dept Columbia)
* Select professional projects:
  + Using Apache Spark, developed a model to identify VIX index manipulation. This model relies on Hodrick-Prescott spike detection to identify large moves in VIX and then calculates the attribution of VIX index moves to the price movement of underlying S&P 500 options
  + Classified client trading behavior (e.g. market maker, broker, buy side) across instruments by developing features e.g. total active time in market and total time they were inside the National Best Bid Offer (NBBO), frequency of updates, end of day net trading to gross traded quantity, difference (in security industry/ instrument type) with respect trading history. This plays an important role in identifying anomalous trading behavior.
  + Classified stocks into liquidity buckets by using Principal Components to combine different features e.g. bid/ask spread, bid/ask size, trading volume, price volatility