VIVEK KHAJURIA

+1-(862)-235-0695| vivek.khajuria@rutgers.edu| 301 First St., Harrison, NJ - 07029

EXPERIENCE

BLACKROCK New York City, NY

Machine Learning / NLP Researcher Nov 2016 – Present

Currently associated with the Financial Modeling Group and involved in developing the Natural Language Processing Algorithms to support the next generation liquidity model.

- **NLP- Sentiment Model (Convolutional Neural Networks)**
  - Predicted the impact of real-time high-frequency financial news data on stock performance with an accuracy ranging from 72% to 78%.
  - Implemented Deep ConvNets to generate sentiment signals based on intra-day financial news data, spanning across multiple sectors and companies.
  - Created a word2vec model to train pre-trained word vectors on the financial news data to effectively capture the semantic relationships between financial terms.
  - Explored probabilistic distributions to calibrate the impact of real-time financial news on stock price returns.
  - Used memory mapping, parallel computing, generators to increase computational efficiency and optimization of the model data flow.
- **Natural Language Generation: Auto Generated Commentary (ConvNets and Long Short-Term Memory)**
  - Took the initiative to generate financial commentary based on the global market statistics using deep neural networks.
  - Implemented ConvNets to extract features from the daily sector-based market data and decoded them into natural language sentences using LSTMs.
- **NLP- Attention and Memory Networks (Gated Recurrent Units-GRU)**
  - Generated sector and company level sentiment signals using soft attention with an accuracy ranging from 65% to 71%.
  - Used bi-directional GRUs over the distributed vector representations to compute financial news and keyword embeddings.
  - Implemented dynamic memory network to condition its attention on task-relevant input representations.

BLOOMBERG / Rutgers Business School Newark, New York City

Machine Learning / NLP Research Intern May 2016 – Aug 2016

Worked with the Global Head of Liquidity Research to develop solutions using sentiment analysis and created an efficient pricing model in an environment of increasing regulations and illiquid fixed income markets.

- Explored Supervised Machine Learning techniques like Naïve Bayes Algorithms, AdaBoosting, SVM(Support Vector Machines) as a potential solution to sentiment analysis to real-time news.
- Achieved accuracy ranging from 65% to 73% in interpreting the sentiment of the news headlines for predicting the movement of stock prices of a company.
- Implemented n-gram feature extraction to create a feature-based grammar for recognizing phrase level contextual polarity.
- Created a word-tagging approach based on voting system using StanfordCoreNLP, OpenNLP and NLTK for parsing a sentence.
- Used WordNet and SentiWordNet as a lexical resource for opinion mining and computational linguistics.

Department of Finance & Economics, Rutgers Business School New Brunswick, NJ

Graduate Teaching Assistant June 2016 – Dec 2016

- Offered high range of teaching and assessment services including tutorials for the Financial Management, Fixed Income and Derivatives undergraduate courses at Rutgers Business School.

DNBL Public School Jammu and Kashmir, India

Teaching Volunteer June 2013 – May 2015

- Taught mathematics in a high school to the underprivileged students in the remote areas of Kashmir.
- Scrutinized volunteer/teacher applications and managed the challenging deployment of limited resources to maximize the productivity.

GS LAB Pune, India

Software Development Engineer July 2011 – May 2013

- Designed, developed and implemented various web automation frameworks on real-time systems for testing websites.
- Initiated and enhanced the operational efficiency of web automation frameworks by 30%, reducing the latency using Python multithreading and Selenium Grid automation tool.

SKILLS AND CERTIFICATIONS

- **Languages and Tools:** Python (TensorFlow, SciKit-Learn, SciPy, NLTK), StanfordCoreNLP, R, PSQL, C/C++, Shell scripting, Linux, Spark, PySpark and Google Cloud.
- FRM Part 2 Candidate, CFA Level 2 Candidate, and National Stock Exchange Certified Market Professional.

EDUCATION

RUTGERS BUSINESS SCHOOL New Jersey, USA

Master of Quantitative Finance (GPA : 3.5/4.0) August 2015 - December 2016

- **Relevant Coursework:** Financial Time Series, Optimization Models in Finance, Econometrics, Probability, Object-orientedProgramming, Data Mining, and Machine Learning.
- **Academic Project:** Time Series Analysis - VaR Forecasting using Machine Learning.
  - Implemented and compared a number of machine-learning algorithms (LASSO, Elastic Net, Random Forest, and Boosted Trees) to estimate the expected return on the USDINR exchange rate. GARCH (1,1) was used to estimate the volatility.

UNIVERSITY OF PUNE Pune, India

Bachelor of Engineering in Electronics and Telecommunication (GPA: 3.6/4.0) July 2007 - June 2011