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Introduction

Experience Data Scientist with Master's level education background in Machine Learning and Financial Mathematics. Python, Java, and C/C++ programmer. Skilled in quantitative/machine learning modeling. Knowledge in probability, statistics, data structure, and optimization. Familiar with database, and cloud computing. Experienced with collaborating with the business team.

Work Experience

- **Swiss Reinsurance Company Ltd. (Swiss Re)** — **Armonk, NY**
  Data Scientist — *Jan 2019–Present*
  - **Wildfire Risk Prediction in North America**
    - Estimated wildfire risk in North America using meteorological and geographical data; Large fire prediction performs at precision(37%) and recall(81%) (Python, Generalized Linear Model)
  - **Catastrophe Loss Impact Estimation Model**
    - Estimated the loss of catastrophes(wild fire, flood, etc.) using satellite images, coverage policies, and geographic data from various resources; Narrowed down the percentage error within 10% (Zonal Statistic, Random Forest Regression, CNN, Python, ArcGIS)
  - **Insurance Policies Dataset Management & Computing Cluster Configuration**
    - Aggregated metadata description for an internal big dataset(billions of records); ETL for data mining(SQL); Backtested hypothesis and correlation(SparkML); Clustering(SparkML); Configured the cloud computing clusters(Linux)
  - **Home Renters Insurance Market Analysis**
    - Identified home rental insurance market opportunities in New York State using self-designed opportunity scoring metrics(Significance Test, Linear Regression); Visualized in an interactive dashboard (Python, JavaScript)
- **King Street Capital Management, L.P.** — **New York, NY**
  Data Science Intern (full-time for 6 months) — *Jul 2018–Dec 2018*
  - **Companies KPI Forecasting Model**
    - Forecasted KPIs of companies using an ensemble model; All base and top learners are SVMs with different constraints
    - Handled collinearity in meta-features by matrix factorization; Reduced overfitting by ridge regularization and noise injection; Direction prediction performs at accuracy 86% (SQL, Python, Scikit-learn, Stacked Ensemble Model)
  - **Analyzing Alpha in Corporate Filings**
    - Categorized companies with high and low information ratio based on corporate fillings using Tf-Idf, RNN and attention mechanism
    - Generated sentence representation with word-embedding and textual changes over time; Achieved accuracy 82% with index as benchmark
- **Crypto Investments** — **New York, NY**
  Machine Learning Engineer Intern — *Sep 2017–Dec 2017*
  - **Event-Driven Forecasting Model for Price of Cryptocurrencies**
    - Web-scrapped cryptocurrencies news and trade data by API; Data management for scrapped data(Python, MongoDB)
    - News sentiment analysis by Word2Vec; Event embedding by Open IE; Captured effects of different time spans by CNN

Technical Skills & Certificates

- **Programming & Scripting Language:** Python, Java, C/C++, Scala, R, Matlab
- **Toolkits, Softwares & Operating Systems:** SQL, Spark, Hadoop, AWS, Tensorflow, Pytorch, Keras, NLTK, Scikit-learn, Numpy, Pandas, Github, Linux/Unix

Education

- **New York University, Courant Institute of Mathematical Sciences** — **New York, NY**
  Mathematics in Finance; part-time graduate program on-going — *Jan 2019 – Present*
  Courseworks: Derivative Securities, Operating System(C/C++), Risk and Portfolio Management with Econometrics, Financial Modeling(Java), Algorithmic Trading & Quantitative Strategies
- **New York University, Courant Institute of Mathematical Sciences** — **New York, NY**
  M.S Data Science; GPA: 3.3/4.0; — *Sep 2016 – May 2018*
  Courseworks: Machine Learning, Natural Language Processing, Deep Learning, Statistical and Mathematical Methods, Big Data, Data Science in Quantitative Finance, Advance Python Programming
- **Sun Yat-sen University, School of Engineering** — **Guangzhou, China**
  B.E Engineering Mechanics (Fluid Dynamics Focus); GPA: 3.7/4.0; Honor: Annual scholarship (three years) — *Sep 2012 – Jun 2016*
  Courseworks: Numerical Methods, Finite element analysis, Ordinary Differential Equations, Fluid Dynamics

Portfolio

- **Operating System Components**
  Keywords: *C/C++, Operating System, Object-oriented Programming*
  - Linker; Process Scheduler(discrete event simulation model); Virtual Memory Management Unit; I/O Scheduler
- **Text Summarization Neural Network for News**
  Keywords: *Python, Pytorch, Bidirectional-LSTM, Attention Mechanism, Pointer Network, Semantic Relevance*
  - A hybrid of extractive and abstractive approaches text summarization model trained on CNN/Daily Mail news
  - Bi-LSTM encoder with attention mechanism; Pointer Network improves the accuracy of words generation and the ability of handling out-of-vocabulary words; Semantic relevance encouraged loss function
- **Commodity Trading Position Forecasting Model**
  Keywords: *Python, Alpha Strategy, Matrix Factorization & Decomposition, Regularization, Linear Regression*
  - Created a regression model that forecasts the optimal trading positions for oil, sugar, copper, gold, and natural gas futures