Eric (Binqian) Zeng

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Introduction

Experienced 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, big data analysis, and cloud computing. Experienced in collaborating with the trading desk and the research team. Seeking full-time opportunities in the cross of technology and finance.

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 Models**
    - 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, 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