Jiayi Zhang

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EDUCATION

UNIVERSITY OF MICHIGAN *Ann Arbor, MI*

Master of Science in Quantitative Finance and Risk Management *September 2017-Expected May 2019*

Course Highlights: Financial Derivatives, Derivative Pricing, Stochastic Calculus for Finance in Discrete time and Continuous Time, Computational Finance, Linear Regression in R, Statistical Analysis of Financial Data, Analysis of Time Series, Machine Learning and Predictive Analytics

UNIVERSITY OF MINNESOTA, TWIN CITIES *Minneapolis, MN*

Bachelor of Science in Actuarial Science GPA:3.71 *September 2014-May 2017*

***Course Highlights*:** Numerical Analysis, Stochastic Process, Mathematics Modeling, PDE, ODE, Complex Analysis, Database Syste in SQL, Advanced programming in Clojure, Econometrics, Risk Management, Financial Reporting, Finance Fundamentals, Financial markets and Business Strategy

WORK EXPERIENCE

GUANGFA SECURITIES *Shanghai, China*

Quantitative Macroeconomic Research Analyst *June 2018-October 2018*

- **Applied regression to predict Economic indicators and studied the volume-price relationship of the economic market**: searched for high frequency price indicators highly correlated with the components, conducted linear regressions, R squared is 0.90 and error was only 0.3%
- **Researched industrial prosperity from multiple analysis dimensions**: drew the industrial chains and industries based on the input-output and investing-production relations, indicated the prosperity by shades of colors, which appeared times in weekly reports and was regarded as template
- **Established and enhanced data analysis models**: included data auto-updated methods, simulated the above dimensional analysis process using Offset, Index, Match and Conditional Formatting in Excel to automatically perform coloring and present results, and cut labor hours by 80%

CHINA MERCHANTS SECURITIES *Shenzhen, China*

Asset-backed Securities Analyst *May 2016-August 2016*

- **Built the option-theoretic valuation model to predict future cash flows under analysis of probability of default (PD) and prepayment risks**: Processed and integrated four types of data (borrower's payment history, account data, reference data, and macro-economic data), used MATLAB to build the model to create analytic-ready tables for cash flow forecasting, which became leading references for future securitization projects
- **Played a crucial role in due diligence and explored creative securitization projects based on various assets**: Enhanced interpersonal skills by participating in due diligence of 5 securitization projects and facilitating cross-party communications, and studied the securitization markets

RESEARCHES & PROJECTS

GOOGLE ANALYTICS ON CUSTOMER REVENUE PREDICTION *Ann Arbor, MI, September 2018-December 2018*

- **Explored and processed dataset using Pandas and Sklearn:** Imputed zeros for missing data, processed categorical features using LabelEncoder, split the training dataset into development and validation based on time, and returned the natural logarithm of values as growths to do predictions
- **Compared performances between tree-based algorithms:** Used Decision Tree, Random Forest, XGBoost, LightGBM and CatBoost to apply predictions, calculated RMSEs, and found out that Gradient Boosting Machines can handle categorical features dataset best and its RMSE is 1.46

RESEARCH ON USING CONDITIONAL NEURAL PROCESSES FOR REGRESSION ON DOW JONES INDEX

Ann Arbor, MI, September 2018-December 2018

- **Processed dataset using Tensorflow and Excel:** Normalized and separated the Index prices in years, expanded one-dimension data to three, randomly selected 10 batches to do the training, and in each batch, generated context points and target points from uniform distributions
- **Implemented Conditional Neural Networks using Tensorflow**, estimated the loss by returning the log likelihood of the targets' ground truth values under the predicted distribution, returned and plotted the predicted mean and variance at the target locations using different context points and after various iterations, and turned out that CNN can successfully captured the trends of Dow Jones Index and the loss is 0.010

RESEARCH ON USING DEEP NEURAL NETWORKS TO PREDICT CLUSTERING-BASED FINANCIAL MARKETS

Ann Arbor, MI, April 2018-Present

- **Applied Clustering to grouping stocks and established training sets on a rolling base of sixty minutes**: computed stocks' financial indicators from data, applied k-means clustering algorithm to divide them into eight groups, and chose one minute after train sets as test sets
- **Applied Recurrent Neural Networks to predict the directions of stock prices**: applied RNN on clustering data to learn the directions of each minute of equity markets**,** and concluded that the average accuracy is 0.65 and the model outperformed non-clustering RNN and SVM

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RESEARCH ON FINANCIAL VOLATILITY OF NASDAQ AND ITS PREDICTION *Ann Arbor, MI, March 2018*

- **Selected GARCH models and predicted its future values**: Selected the GARCH model with minimum AIC on R, performed diagnostics by analyzing the correlations and normality of residuals, and concluded that the prediction and historical lines almost completely overlapped
- **Built POMP model based on Stochastic Volatility Model with Random-Walk Leverage and compared likelihood values**: Built POMP model and checked the convergence of the parameters in the model, and found out it has higher maximum likelihood value than that of GARCH Model

SKILLS AND CERTIFICATIONS

Programming skills*:* MATLAB, R, Python, SQL, and Clojure **Database Tools**: Bloomberg and Factset **Office Tools:** Microsoft Excel