Wang, Anran

+1-201-204-8636 | anranwang96@outlook.com

EDUCATION

Stevens Institute of Technology *Aug 2018 - Dec 2019*

M.S. in Financial Engineering *Hoboken, NJ, US*

- GPA: 3.918 / 4.000

Ocean University of China *Jun 2018*

B.S. in Mathematics and Applied Mathematics *Qingdao, Shandong, China*

RESEARCH EXPERIENCE

Portfolio Construction based on Wavelet Neural Network and Reinforcement Learning *Sep 2019 - Dec 2019*

Group Leader *Hoboken*

- Applied the combination of Wavelet Decomposition and LSTM Neural Network, trained models using ten-year randomly selected 50 stock daily price data. Used model to predict price time series and constructed mean-variance portfolio based on the predictions. The Wavelet Neural Network has a better prediction accuracy than a FFT Neural Network.
- Constructed a portfolio based on Deep Reinforcement Learning. Compared model performances using MLP and LSTM as different agents, wavelet coefficients and daily prices as different observations, Sharpe Ration and daily return as different reward functions. Trained the neural network agent using the Actor-Critics algorithm. On the test set, the DRL portfolio has a 3.2% higher annual return than S&P 500.

Computational Method for Pricing of Exotic Options *Mar 2019 - May 2019*

Team Leader *Hoboken*

- Compared computational efficiency of different computational method for pricing exotic options.
- Used binomial tree, finite difference, FFT and Monte Carlo simulation to price an emotional based exotic option.

The Soccer Team Rank Analysis based on Machine Learning Method *Nov 2018 - Dec 2018*

Member *Hoboken*

- Used Forward Stepwise Selection to select 5 out of 13 soccer team features. Regressed features to points earned each match using multiple regression and Lasso regression. The Lasso regression has smaller mse on the test set.
- Selected 2 features out of 5 which are team value and shoot on target. Used K-Means to split all teams into 5 classes. Teams in the first class have a great chance to win the champion.

Multi-scaled Financial Time Series Analysis based on EMD Method *Feb 2017 - Jun 2017*

Group Leader *Qingdao*

- Used EMD method to decompose the ten-year Shanghai Stock Index daily log return time series into IMFs representing different time scales. Calculated Hurst exponent using R/S method for each IMF. The short-term IMF's Hurst exponents are less than 0.5, indicating an anti-persistence, whereas the Hurst exponents of the long-term IMF are close to 1, indicating that long-term return is sustainable.
- Analyzed Multi-scale of IMFs through generalized Hurst exponent. Showed that the government's macro-control and the role of maintaining market stability are more obvious in short-term. Used scale index shows that the return rate has more influencing factors in a short period of time.

Research on the Impact of Tides on Agriculture based on Machine Learning *Feb 2017 - Apr 2017*

Member *Qingdao*

- Used tidal duration, vertical height, and element content to classify daily tide data for the past ten years through KMeans and DBSCAN which are machine learning classification methods. Different tides are divided into three groups. Most of the tides in the first group will have higher vertical height and sodium content, which will cause damage to agricultural land on the coast.
- Used Artificial Neural Networks to take the tidal characteristics of each quarter as inputs and the farmland output as a label for supervised learning to predict the impact of the tide on agriculture.

Time Series Analysis for China Currency M2 Amount *Apr 2016 - May 2016*

Member *Qingdao*

- Used ARIMA and GARCH model to analyze the time series of China M2 amount. Determined the orders and calibrated the coefficients of the models. Predicted the M2 amount of May 2017 is 1609124 which the true value is 1609740.

PROFESSIONAL EXPERIENCE

Shanghai CIFCO Futures Co. Ltd *Sep 2017 - Jan 2018*

Quantitative Analysis Intern , Asset Management Department *Shanghai, China*

- Joint the Quantitative Investment Strategy Group, participated in the establishment of Multi-Factors Alpha-seeking Portfolio Strategy of the small listed companies. Sought factors and built portfolio adjustment framework. Back-tested day trading performance and had a 10% higher annual return than SSI. Improved portfolio risk resistance with team members.
- Assisted in the development of portfolio recommendation systems. Trained neural network to analyze clients' risk tolerance and investment propensity, based on their questionnaires and asset status.

Qualification & Skills

- TOEFL: 106 (R: 29; L: 28; S: 23; W: 26)
- GRE: 325 (V: 157, 76%; Q: 168, 93%; AW: 3.0, 15%)
- Professional Skills: Python, C++, R, Matlab; Python ML library such as TensorFlow, Keras, scikit-learn, OpenAI Gym, Stable Baselines