

# Hongzhen Du

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## EDUCATION

### Xi'an Jiaotong-Liverpool University

*Bachelor of Economics | Finance Track*

Jul 2023 (Expected)

- **GPA:** 3.74/4.00; **Major GPA:** 3.85/4.00 **Rank:** 4/121
- **Math Coursework:** Probability and Statistics, Mathematical Economics, Econometrics, Real Analysis, Game Theory, Stochastic Calculus, Financial Mathematics, Financial Engineering.
- **Economic & Finance Coursework:** Microeconomics, Macroeconomics, Financial Management, Chinese Economy, Environmental Economics, Asset Pricing.
- **Honors:** University Academic Achievement Award (2021-2022), Continuing Academic Merit Scholarship (2019-2021)

### University of Chicago

*Summer Visiting Student*

Jun 2022 - Aug 2022

- Coursework: Quantitative Portfolio Management & Algorithmic Trading

### Imperial College London

*Winter School Student*

Jan 2022 - Feb 2022

- Coursework: Computer Vision and Natural Language Processing

## PROFESSIONAL EXPERIENCE

### GF Securities | Over-The-Counter Department

#### *Quantitative Analyst Intern*

Jun 2022 - Aug 2022

- Built an alpha equity model using fundamental factors including ROE, monthly turnover rate and year-to-year growth rate, and constructed portfolio by taking position in equities with largest excess return in each industry, achieving an excess return of 12%.
- Constructed a pairs trading strategy by finding the highest correlated stocks of Top 5 industries in CSI 500 index through ADF test and correlation analysis from past 5 years' data, with the result of 11% maximum drawdown and highest Sharpe ratio of 1.88.
- Constructed an indicator to determine the bull and bear market by volatility and turnover rate between 2010 and 2019 and utilized double moving average strategy for market timing comparing to stock indices, that new indicator had better Sharpe ratio.
- Classified anti-money laundering rating system of clients by keyword of the message subjects and achieved accuracy of 90%.

### Orient Securities | Asset Management Department

Jul 2021- Aug 2021

#### *Summer Analyst Intern*

- Analyzed financial statements to write 4 in-depth recommendation reports on several companies in Li-ion battery industry illustrating my recommendation logic, which contributes to increase the department fund by 10%.
- Analyzed the performance of the new energy vehicle market through macro data and wrote an industry research report concluding an optimistic scenario of the new energy vehicles consumption with achievement of 20% targeted market share.

## RESEARCH EXPERIENCE

### Machine Learning Application in Multi-factor Portfolio Management | *Individual Research*

Sep 2022 - Nov 2022

- Performed visualization and standardization on HSI300 raw data of past decade, combined RankIC and Spearman matrices on 30+ technical and fundamental factors to screen out 5 for the stock selection model.
- Constructed multi-factor model by linear and LASSO regression for mean variance optimization and applied Alphas to devise factor weighted long-short portfolio cumulative return curves and in Python, which attained annual return of 33%.

### Time Series Forecasting Analysis for an Investment Strategy

May 2022 - Aug 2022

#### *Summer Undergraduate Research Fellowships (SURF) at Xi'an Jiaotong-Liverpool University*

- Exported the corresponding trading dates of the 5% VaR for daily returns for SP500, FTSE100 and HS300 via Excel, and executed a buy-low-sell-high strategy using MWRR using data from 2010 to 2014, achieved an annual return of 11%.
- Backtested the VaR of transaction days with abnormal accounting ratios through Christoffersen Test in R, with HSI300 and SP500 data between 2014 and 2019 after taking first order difference, which verifies the effectiveness of the strategy.

### Textual Analysis and Machine Learning in Predicting Stock Prices | *Project Leader*

Jun 2022 - Jul 2022

#### *National University of Singapore Summer Computing Workshop, Advisor: Prof. Anand Bhojan*

- Segmented words from texts in US equity news and constructed investor sentiment index by mapping to emotion word dictionary and constructed investor sentiment index by giving marks to every word representing the investors' attitude to the stocks.
- Analyzed 10,000 pieces of news for 5 selected stocks, forecast stock price movement with sentiment score using LSTM model, and achieved accuracy of 82% for the time period between 2019 and 2022.

### Regression Analysis of Money Supply's Impacts in Turkey | *Individual Research*

Mar 2022 - Apr 2022

- Constructed 6 distributional lag models with different factors in STATA to test correlations and changes of dynamic cumulative multipliers between money supply, unemployment rate and real interest rate with data downloaded from Turkish Central Bank, and rejected the feasibility of applying monetary neutrality assumption on Turkish economic crisis over the last decade.

**Policy analysis of Hong Kong and Thailand during 1997 Financial Crisis** | *Group Leader* Feb 2022 - Apr 2022  
*UChicago & PKU MPIF Capstone Project Excellence Award, Advisor: Prof. Dave Schabes at University of Chicago*

- Examined the exchange rate systems under different choices in the monetary trilemma and presented connections dynamically between monetary policies and the movements of GDP and short-term interest rates.
- Analyzed the different reasons why the domestic currency overvaluation happened and how the current account deficit impacted the overall economy of Hong Kong and Thailand during the 1997 East Asian Financial Crisis, and demonstrated the rationale of corresponding fiscal and monetary policies on economic conditions.

**Word Representation in Biomedical Domain Under Natural Language Processing** | *Group Leader* Jan 2022 - Feb 2022  
*Best NLP Project, Imperial College London Data Science Winter School*

- Tokenized titles of academic papers downloaded from CORD-19 corpus into words in Python and found the 10 most relevant words co-occurred with “COVID-19” through comparing Pointwise Mutual Information (PMI) in a co-occurrence matrix.
- Performed PCA and t-SNE to reduce the dimensions of word vectors and visualized 100 selected biomedical entities and filtered the top 10 most semantically similar entities within the corpus by calculating cosine similarity.

**Comparison between Domestic and Foreign Output Gap** | *Research Assistant* Oct 2021 - Jan 2022  
*Supervisor: Prof. Syed Abbas at Xi'an Jiaotong-Liverpool University*

- Utilized HP filters to generate output gap and potential output through monthly and quarterly total trade, GDP and IPI statistics after data cleaning and exported datasets containing trade weights and output gap through STATA.

## LEADERSHIP EXPERIENCE

**LinkedIn (China) Global Business Challenge** | *Project Leader* Oct 2021 - Nov 2021

- Coordinated a team of 5 to analyze the business situation of LinkedIn (China) after withdrawing social functions and organized the investigation regarding the feasibility of offering online professional courses with recognized certificates to bridge skill gaps.

**Promotion on Suyin Jewelry by E-Commercial Live Broadcast** | *Project Leader* Dec 2020 - Mar 2021  
*First Prize at XJTLU Social Practice Competition*

- Proposed the overall research portfolio and directed a roadshow that reproduced the research process and performed a mixture of drama, live broadcast and hip-hop.

## SKILLS AND OTHERS

**Technical:** Python, STATA, EViews, R, SQL, Wind, Bloomberg, Microsoft Office, LaTeX

**Language:** Chinese (Native), English (Fluent), Cantonese (Fluent), Spanish (Elementary)

**Interests:** Travel, Urban Exploration, Fan Mail, Trainspotting, Hiking, Drama

**Open Courseware Certificates:** Machine Learning (Stanford), Deep Learning (DeepLearning.AI), Financial Engineering and Risk Management (Columbia), Python and Statistics for Financial Analysis (HKUST), ML and RL in Finance (NYU), SQL for Data Science (UC Davis), Numerical Analysis (HSE University), Data Structures (UCSD), Operational Research (NTU)