

# Hongrui HU

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## EDUCATION

<b>Nanyang Technological University   School of Biological Science</b>	<b>Singapore</b>
<b>Biomedical Data Science</b>	09/2025 - 06/2026
▪ <b>Courses:</b> Machine Learning, Biomedical Data Mining, Story-telling with Graphics and Visualizations, Bio-statistics	
<b>University of International Business and Economics   School of Statistics</b>	<b>Beijing</b>
<b>Financial Mathematics</b>	09/2021 - 06/2025
▪ <b>Courses:</b> Mathematical Analysis, Advanced Algebra, Mathematical Statistics, Stochastic Processes, Regression Analysis and Econometrics, Time Series Analysis, Statistical Computing and Data Mining, Financial Pricing Analysis, R Language, Python	

## AWARDS & HONORS

- American College Student Mathematical Modelling Competition (Meritorious Winner; Top 7%),
- 2024 "Challenge Cup" Capital University Student Entrepreneurship Plan Competition (Gold Prize),
- National Silver Award of the Challenge Cup Competition, Top 100 Innovation & Entrepreneurship Team (Beijing)

## INTERNSHIP EXPERIENCE

<b>Intern, A*STAR Bioinformatics Institute (BII), Computational Digital Pathology Lab, Singapore</b>	08/2025 - Present
▪ Engaged in exploratory projects on multimodal AI for prostate cancer, integrating H&E whole-slide images with MRI and clinical data to enhance diagnosis and prognosis through cross-modal feature transfer and predictive modeling.	
▪ Currently performing feature extraction and analysis from H&E slides using advanced image analysis frameworks (OpenSlide, MONAI, PyTorch) as the foundation for multimodal model development.	
<b>Quantitative Trading Intern, COFCO FUTURES, Financial Business Department, Beijing</b>	01/2024 - 03/2024
▪ Assisted in developing and refining a factor-based trading framework to support stock selection and performance attribution, contributing to a 6% improvement in portfolio returns.	
▪ Supported risk management by conducting scenario analysis and applying quantitative methods to evaluate potential market exposures, helping prevent multiple major trading risks and supporting more robust trading decisions.	
<b>Research Assistant, SDIC SECURITIES, Research Institute, Beijing</b>	06/2023 - 09/2023
▪ Produced five special reports on leading companies in the energy and defense sectors, highlighting key drivers of stock price fluctuations and sector sensitivities.	
▪ Analyzed industry chains, competitive dynamics, and policy developments in the energy and defense markets, delivering insights that informed client strategies and investment decisions.	

## RESEARCH & TECHNICAL PROJECTS

<b>Kaggle Competition Project: RNA 3D Folding Challenge (Stanford University)</b>	05/2025 – Present
▪ Engineered end-to-end data pipeline standardizing raw RNA sequences into YAML configs for Boltz-1/Protenix inference, ensuring scalable and error-free batch processing.	
▪ Applied diffusion-based ML models and ensemble strategies to predict RNA 3D structures, demonstrating transferable machine learning and data engineering skills across biomedical datasets.	
<b>Project, Leader, Research on Risk Assessment Models for Small Enterprises</b>	03/2024
▪ <b>Awarded Meritorious Winner (Top 7%)</b> in the Interdisciplinary Contest in Modeling (ICM) for developing quantitative models (logistic regression and BP neural networks) to evaluate SME credit risk across four major industries.	
▪ Proposed an integrated risk management framework highlighting the importance of credit allocation efficiency and systemic risk control, offering policy-oriented insights for financial institutions and regulators.	
<b>Three-Factor Crude Oil Futures Return Hedging Model</b>	12/2024 - 03/2025
▪ <b>Recognized as an Outstanding Project at the School level</b> , this work developed a return-hedging framework incorporating storage costs, interest rates, and market volatility to strengthen crude oil futures risk management.	
▪ Achieved a 47% reduction in risk during testing and outperformed traditional benchmarks in risk-adjusted returns, providing evidence-based support for portfolio strategy.	
<b>Project, Leader, Analysis of Meteorological Factors on Urban Air Quality</b>	11/2024 - 01/2025
▪ Multi-dimensional feature engineering: Integrated meteorological and air quality datasets, performed data cleaning and aggregation, and extracted daily pollution intensity metrics and extreme weather labels for modeling analysis.	
▪ Pollution prediction & policy support: Built a random forest model in R (ntree=100), identified wind speed and humidity as key predictors, and simulated intervention scenarios to inform Beijing's air quality policies.	

## BUSINESS & STRATEGY PROJECTS

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### ***KPMG Case Competition – Solar Energy & Education Strategy for BOP Communities***

10/2022

- Conducted industry and policy assessment using Porter's Five Forces and PEST frameworks, identifying Power-Solution's cost-leadership challenges and core competencies in serving BOP population.
- Proposed integration of solar products with educational functions aligned with UN SDGs, supported by an implementation roadmap including last-mile logistics, vocational training, and cross-selling partnerships.

### ***Research Project – Market Prospects of Liquor among Younger Consumers***

01/2024 - 05/2024

- **Won the third prize of Beijing Municipality.** Designed and analyzed a large-scale consumer survey (817 valid responses), applying RFM segmentation, regression, and correlation analysis to capture shifting preferences of younger demographics in China's baijiu industry.
- Identified brand positioning and product appeal gaps, and proposed rejuvenation strategies through product innovation, cultural branding, and policy-aligned transformation to support sustainable market expansion.

### ***Project, Leader, Market Analysis Project: Beauty Industry under the "Appearance Economy"***

11/2024 – 11/2024

- Conducted macro- and micro-level research on the beauty industry within the "appearance economy," combining consumer trend analysis, industry case analysis of leading brands (Perfect Diary, Florasis), and statistical evaluation.
- Identified key challenges such as market saturation, brand crises, and rising consumer expectations, and proposed strategic directions including cross-industry collaboration (medical aesthetics, TCM), digital innovation (metaverse, AR/AI), and sustainable/green development.

## ADDITIONAL INFORMATION

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- **Technical Skills:** Excel (Advanced), Python (pandas, NumPy, seaborn), R (dplyr, ggplot2), MATLAB, Stata, SPSS
- **Languages:** English, Mandarin (Native)
- **Interests:** Tennis, Badminton, Skiing, Hiking, Photography