YUSANG(STELLA) HE

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EDUCATION

Columbia University *New York, USA*
M.S. in Applied Mathematics, Minor in Finance *Jan 2024 – May 2025*
Leadership: Department Representative, Engineering Graduate Student Council (EGSC).
Curriculum: ML in Finance, Stochastic Analysis, Algorithmic Trading, Computational Methods in Finance, etc.

University of Texas at Austin *Austin, USA*
B.S. in Mathematics and B.S. in Economics *Jan 2021 – Dec 2023*
Honors: Department Honors, ISSS Financial Aid (TPEG) Scholarship $10,500.
Certificate: Applied Statistical Modeling.
Curriculum: Micro/Macro/Game Theory, Real & Numerical Analysis, Econometrics, Causal Inference, etc.

RESEARCH INTERESTS

Text-based Financial Economics, Corporate Governance and Disclosure, Empirical Asset Pricing, Machine Learning, FinTech–Bank Partnerships and Financial Intermediation

PROJECTS

CEO Interview Sentiment and Event Analysis Grant-Funded Research Assistantship
Research with Prof. Ben Chaoroenwang, INSEAD Singapore *July 2025 – Oct 2025*

- Processed 3,957 CEO interview transcripts from CNBC programs using Loughran-McDonald Lexicon and custom event detection, creating 42-feature dataset for analysis.
- Identified statistically significant sentiment variations across programs (ANOVA $F=54.13$, $p<0.001$) with Mad Money showing highest sentiment (0.244) and Fast Money lowest (-0.092).
- Built end-to-end NLP pipeline analyzing 26M+ words to detect average of 5.42 business events per interview, with 86.8% discussing stock movements and 86.5% future outlook.

American Option Pricing: Formulation and Numerical Analysis Master's Thesis
Supervised by Prof. Steven Campbell, Columbia University *Jan 2025 – May 2025*

- Developed a refined Least Squares Monte Carlo framework for high-dimensional American option pricing using Laguerre polynomial basis functions to improve efficiency and early exercise boundary accuracy.
- Conducted sensitivity analysis on key parameters (volatility, interest rates, dividend yields) for American put options, quantifying their influence on early exercise incentives and premiums.
- Ran extensive simulations to optimize the trade-off between accuracy and runtime, providing calibration guidelines for traders and risk managers.

Algorithmic Trading Project: Fair Value Gap Strategy Integrative Project
Supervised by Prof. Christopher A. Perez, Columbia University *Feb 2025–Apr 2025*

- Developed a trading strategy on Nasdaq-100 futures using multi-timeframe Fair Value Gap (FVG) signals, combining 4H bias detection with 15M confirmation logic.
- Implemented disciplined risk management with predefined stop-loss and 2:1 reward-to-risk take-profit levels; backtested and executed 20+ simulated trades with real-time performance monitoring.
- Achieved 6% ROI in two weeks, demonstrating the effectiveness of systematic, rule-based approaches in capturing short-term market inefficiencies.

Mortgage Loan Default Risk Modeling Capstone Project
Supervised by Prof. JeongHoe Lee, Columbia University *Nov 2024*

- Analyzed 5M+ Fannie Mae records to predict RMBS default risks; compared 8 ML models with LR baseline, delivering 92.12% accuracy and 95.31% specificity.

Time-Series AI for Stock Forecasting Capstone Project
Supervised by Prof. JeongHoe Lee, Columbia University *Oct 2024 – Nov 2024*

- Developed an algorithmic trading system using machine learning (LSTM, RNN, XGBoost); achieved $R^2 = 0.87$ for price prediction.
- Engineered time-series features and implemented an RSI-based strategy, yielding 5.89% ROI (including transaction costs) over 149 days.

Twitter Bio Classification using NLP Grant-Funded Research Assistantship
Digital Writing and Research Lab, UT Austin *Sep 2022 – Dec 2022*

- Built end-to-end NLP pipeline to classify bios based on online profile text data, identifying the authenticity of healthcare professionals on Twitter using an ensemble of GLM, NN, and Naive Bayes (AUC: 0.86).

INDUSTRIAL INTERNSHIPS

Formation Capital Group Jun 2022 – Dec 2023
Investment Banking Intern *USA*

- Drafted 8+ investment teasers and executive summaries for companies seeking growth capital, incorporating 3–5 year financial projections and cash flow forecasts to highlight investment merits, performance metrics, and valuation support for potential investors.

PwC Apr 2020 – Jun 2020
Management Consulting Intern *Beijing, China*

- Delivered strategic consulting project for Chinese airline, leveraging predictive analytics on 2M+ customer records and market analysis to present senior leadership with data-driven recommendations for revenue optimization, targeting 20% improvement in yield management efficiency.

EXTRA-CURRICULAR ACTIVITIES

Columbia Engineering Engineering Graduate Student Council Spring 2025
Department Representative, Applied Mathematics *New York, NY*

- Organized and moderated professional development panels on job negotiation and career pathways, coordinating 4–5 industry panelists per session.

Read Ahead Program (Columbia University Partnership) Oct 2024 – May 2025
Literacy Mentor *New York, NY*

- Conduct bi-weekly virtual literacy mentoring sessions for elementary students, supporting reading fluency, comprehension, and confidence through individualized guidance.

Economics Peer Mentor Program (EPMP), University of Texas at Austin Jan 2021 – May 2023
Peer Mentor *Austin, TX*

- Guided undergraduate mentees transitioning to UT Austin through academic advising, peer support, and group mentoring activities.

Peer-Led Undergraduate Studying (PLUS), University of Texas at Austin Spring 2022
Facilitator – ACC 310F: Foundations of Accounting *Austin, TX*

- Conducted 1.5-hour weekly study sessions under Professor David Verduzco, facilitating peer learning and strengthening understanding of accounting concepts.

CAS Competition – Data Visualization on Hurricane Risk Spring 2022
Team Member *Austin, TX*

- Built data dashboards and performed scenario analyses on hurricane impacts; received *Honorable Mention* for innovative visualization and risk pricing approach.

March Economic Madness Competition, University of Texas at Austin Spring 2022
Team Member *Austin, TX*

- Researched socio-economic data on Stephenville, TX, to propose sustainable growth and quality-of-life solutions; advanced to the final round as one of four top teams.

UT Outpost, University of Texas at Austin Fall 2022
Officer *Austin, TX*

- Managed food pantry inventory and coordinated professional attire lending for students, supporting campus efforts to enhance student well-being and resource access.

Volunteer Note Taker Summer 2023 & Fall 2024
UT Austin & Columbia University *Austin, TX & New York, NY*

- Took comprehensive notes for *Introduction to Number Theory* (UT Austin) and *Machine Learning in Finance* (Columbia University) to support accessibility accommodations for students with disabilities.

PROFESSIONAL MEMBERSHIPS

Member, CFA Society New York (2024 – Present) Omicron Delta Epsilon (ODE), Economics Honor Society Tau Sigma National Honor Society, Lifetime Member Mathematical Association of America (MAA)

SKILLS

Programming	Python (Pandas, NumPy, SciPy), R, Java
Machine Learning	NLP (LM Dictionary, Sentiment Analysis, Topic Modeling), Classical ML (Regression, SVM, Trees, Ensembles)
Deep Learning Frameworks	PyTorch, TensorFlow, Keras
Data Engineering	Web Scraping (Selenium/DrissionPage), API + PDF extraction, Data Cleaning, Feature Engineering, Large-scale Text Processing
Quantitative Methods	Probability Theory, Statistics, Numerical Methods, Time Series Analysis
Research Tools	LaTeX, Git/GitHub, Jupyter, VS Code, SQL basics