# Yueshan Zhang

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## Education

**Nankai University** *Bachelor of Science in Mathematics* — *Tianjin, China*
*September 2022 – June 2026 (Expected)*

- **Major GPA**: 3.89/4.0 (93.92) — **Cumulative GPA**: 3.8/4.0 (91.66) — **Class Rank**: 4.7%(5/115)
- **Key Coursework:** Real Analysis (94), Numerical Linear Algebra (99), Stochastic Operational Research (99), Operational Research (98), Probability Theory (92), Mathematical Analysis (94).

**University of California, Berkeley** — *Berkeley, CA, USA*
*Visiting Student* — *January 2025 – May 2025*

## Publications & Manuscripts

**Congestion Pricing in New York City: Effects on Ride-Hailing and Transit** — *Revise and Resubmit (R&R)*

**Y. Zhang**, Y. Sang, M. Wu
*Transportation Research Part A*

**Where Adolescent Digital Twins Succeed and Fail? A Multi-layer Validation of Survey-Anchored Generative Agents with an LLM Backbone** — *Manuscript in preparation*

**Y. Zhang**, M. Borhi, J. Giorgio, J. Su, J. Deardorff, F. Ji, X. Zhang, J. Wang

## Research Projects

**Ethical Randomized Experiments on Adolescent Mental Health Using Generative Digital Twins** — *University of California, Berkeley*
*February 2025 – Present*
*Advisor: Prof. Jingshen Wang*

- **Built a survey-anchored digital cohort (N=1,000)** via stratified sampling from the 2023 national YRBS and persona encoding; augmented profiles with **RAG-based narrative memory** extracted from curated adolescent YouTube videos (543 minutes) to add situational and affective context.
- **Designed a multi-layer realism validation suite** spanning survey-profile fidelity, inference on held-out survey domains, preservation of benchmark association networks (self-regulation and online victimisation), and live text conversations with real-world adolescents.
- **Replicated 10 published adolescent RCTs at scale**, implementing original statistical analyses and **reconstructing 81 effect contrasts**; recovered the majority of reported *main treatment effects*, supporting an in-silico sandbox for rapid intervention screening.
- **Identified an "Affective Dissonance" failure mode via human evaluation (N=38)**: standard retrieval can surface incongruously positive memories for high-symptom profiles, reducing perceived social presence and motivating **alignment-aware retrieval** strategies.

**Causal Inference Analysis of NYC Congestion Pricing Policy** — *University of California, Berkeley*
*February 2025 – Present*
*Advisor: Prof. Manxi Wu*

- **Built high-frequency mobility panels across platforms and modes** using OD-pair × hour data from ride-hailing ($N$ = 11,020,491 observations) and subway flows ($N$ = 57,232,758); estimated log-linear Two-Way Fixed Effects (TWFE) models with clustered standard errors to control for spatiotemporal confounding.
- **Exploited Lyft's temporary $1.50 rider credit (Jan 2025) as quasi-experimental variation** to separate toll effects from competitive response: Uber trips declined by up to 6%, while Lyft increased by 2–5% during the subsidy window; total ride-hailing fell by 0.5–1.5% with a ∼1% increase in subway ridership.
- **Quantified heterogeneity by trip distance and fare** and showed impacts concentrated on short and

low-fare rides: short trips fell by >9% and low-fare rides declined by >35%, while longer/higher-fare trips were largely unaffected.

- **Assessed welfare incidence through pricing and earnings channels**: base fares and platform revenue per trip increased (especially for Uber) while driver pay gains were limited, suggesting asymmetric pass-through in a two-sided market setting.

**Sentiment-Driven Crypto Pricing and Return Prediction** *Nankai University*
*September 2023 – May 2025*

- **Integrated Transformer models with Graph Neural Networks (GNNs)** to predict crypto returns, incorporating sentiment analysis and liquidity factors to capture long-range dependencies.

## Internship Experience

**Ericsson** *Beijing, China*
*AI Developer Intern* *August – October 2025*

- **Built an automated evaluation and regression-testing pipeline** for LLM agents, generating post-release reports to track accuracy and consistency.

**Mercedes-Benz** *Beijing, China*
*Data Analyst Intern* *December 2025 – Present*

- **Automated recurring KPI reporting end-to-end** and built a lightweight dashboard for daily monitoring and anomaly drill-down.

## Technical Skills

- **Programming & Tools**: Python, C++, SQL, PyTorch, R, Git.
- **Methods**: Multivariate Analysis, Time Series Forecasting, Causal Inference, Optimization.

## Teaching Experience

**Teaching Assistant for Advanced Algebra and Analytic Geometry II** *Nankai University*
*March – July 2024*

- Graded assignments, provided in-depth guidance during office hours, and led review sessions to reinforce core concepts and enhance exam preparation.

**Teaching Assistant for Complex Analysis** *Nankai University*
*August – December 2024*

- Offered consistent academic support by grading assignments, leading Q&A sessions, and organizing targeted review classes to strengthen student understanding in preparation for exams.

## Academic Awards

- **Zhide Scholarship**: Top 2% (2022 - 2023, 2023 - 2024, 2024 - 2025)
- **Gongneng Scholarship, First Prize**: Top 5% (2022 - 2023, 2023 - 2024,2024 - 2025)
- **National Second Prize**: Higher Education Cup Mathematics Modeling Competition (Team Leader, 2024)
- **Honorable Mention**: American Mathematical Contest in Modeling (MCM,2024)

## Reading Groups

**Deep Learning Reading Group** *University of California, Berkeley*
*February – May 2025*

- Participated in a weekly research-oriented group led by Prof. Manxi Wu, centered on the textbook *Deep Learning: Foundations and Concepts* (Springer, 2023).

**Optimization Algorithms Reading Group** *Nankai University*
*September – December 2023*

- Participated in weekly discussions led by Prof. Daoping Zhang on topics including convex optimization, gradient-based methods, and their applications in large-scale systems.