Kehan Luo (Genghis)

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Your Image

EDUCATION

New York University Shanghai Sep '22 - May '26

Junior | Major: Honors Mathematics & Data Science(AI) Shanghai / New York

- Overall GPA: **3.98**; Honors Mathematics/Data Science GPA: **4.00**
- Researching on **Machine Learning Theory&Applications (diffusion model&reinforcement learning)**
- Work as **Research Assistant** for Prof. Joan Bruna and Dr. Jiequn Han, and jointly for Prof. Mathieu Lauriere
- Taken **PhD-level math and CS/DS courses** at NYU Courant and CDS, learned theoretical/practical knowledge on Generative Models, Reinforcement Learning, Graphical Models, Deep Neural Networks, Online Learning, SVM, Kernel Methods, Boosting, Maxent Models, Game Theory, Bandit Problem, Active Learning, Time Series, Regression, Theoretical&Numerical Optimization.
- Attended Mathematical Contest in Modeling **continuously for 5 years** from high school to undergraduate junior year. Won **Meritorious** prize for 2023 Winter Mathematical Contest in Modeling
- Completed a **Dean Undergraduate Research Fund (DURF) project on Modern Optimization Theories**, and a guided research on Linear Algebra Theories presented at NYUSH Spring 2024 Academic Symposium

PROFESSIONAL EXPERIENCE

New Alliance Capital Jun '23 - Aug '23

Private Equity TMT Group Summer Intern Shanghai, China

- Generated in-depth and data-based industry analysis reports on Biomaterials, Thermal Materials, and New Energy Materials based on financial data to identify both **long-term** and **short-term** growth opportunities.
- Analyzed financial data to segment the thermal materials market, **pinpointed key growth factors**, crafted a **company filter** based on quantitive and qualitative factors and identified out around 20 candidate companies.
- Evaluated over 20 listed and unlisted companies, ranging from industry giants to startups, culminating in the construction of **one diversified portfolio for an investment proposal** as the final project.

PROJECTS

Dean Undergraduate Research Fund May '24 - Sep '24

Modern Optimization Theory and Applications in Optimal Control NYU Shanghai

Instructor: Prof. Vahagn Nersesyan

We initiate our project by studying fundamental Optimization tools, including First and Second Variation methods for single and multi-variable scenarios. We progress to exploring Optimal Control Theory, focusing on Controllability, the Bang-bang Principle, Linear TimeOptimal Control, the Pontryagin Maximum Principle, and Dynamic Programming. We adapt real-life examples and formulate numerical solutions and visualization to them. Our final investigation extend from Optimal Control Theory to its utilization in diverse fields such as Game Theory, Stochastic Calculus, and Partial Differential Equations. (final academic report)

Course Project on Foundations of Machine Learning Sep '24 - Dec '24

Adversarial Robustness Theory and Algorithms NYU

Instructor: Prof. Meyhar Mohri

By looking through recent works in adversarial robustness, we start by defining the question of what adversarial robustness is and why it is important. We then consider frameworks for training robust models, and survey theoretical results that provide insights into the fundamental trade-offs between accuracy and robustness. Specifically, Zhang et al. (2019) introduces **TRADES**, a theory-based algorithm for balancing this trade-off, and Awasthi et al. (2023) introduces a thorough theoretical framework for adversarial robustness theory. Overall, we examine recent advances that improve training by leveraging conditions such as classification-calibrated surrogate losses and the concept of *H*-consistency, thereby guiding the design of robust models that maintain strong theoretical guarantees. (detailed reports)

LEADERSHIP ACTIVITIES

2025 JaneStreet Real-time Market Data Forecasting Nov '23 - Dec '23

Leader | Top 500 Team NYU Shanghai

- Developed an **autoencoder combined with a multilayer perceptron model** to forecast six months of market data using five years of historical data, achieving a ranking of **475 out of 3,757.**

The 2023 Winter Mathematical Contest in Modeling Feb '23 - Feb '23

Team Leader | Meritorious prize

- Set up **mathematical and machine learning models** to solve data-driven real-life problems.
- Wrote complete **30-pages formal essay** to present models and results **within 5 days**. (essay)

Math Club, NYUSH May '23 - Jun '24

President of Math Society at 2023-2024 Academic Year NYU Shanghai

- **Organized 9 club events** throughout the year, including designing and executing a unique college math competition "Mathodology". **Developed the club's social media presence**, including WeChat official account, official website, Instagram, etc.
- **Established networks** with students, professors, and other clubs within and beyond the school, including at University of Pennsylvania. **Oversaw the club's overall budget**, ensuring optimal allocation of funds to maximize the effectiveness of each expenditure. (website)

SKILLS

- Computer Skills: Python, MATLAB, R, SQL, C++, Microsoft (Word, Excel, PowerPoint)
  * Working Proficiency in English and Native in Mandarin.

Certificates

Machine Learning Specialization, DeepLearning.AI Jul '24 - Sep '24

Supervised/Unsupervised Learning and Advanced Algorithms Coursera

Interests

Reading, Travelling (14 countries visited), Chinese GO, Basketball, Gym, Chess.