Lingxuan Zhu

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Education

Texas A&M University — College Station, TX
Ph.D. in Biomedical Engineering (incoming) — Sep.2025-

University of Michigan — Ann Arbor, MI
Master of Science, Major in Biostatistics — Sep.2023-May.2025
- Fully funded for 2024 fall term

The Chinese University of Hong Kong (Shenzhen) — Shenzhen, China
Bachelor of Science with Honors, First Class, Major in Financial Statistics, Rank 14/93 — Sep.2018-Jun.2023
- Award: Dean's List 2020-21, Dean's List 2022-23

University of California-Berkeley — Berkeley, CA
Summer Session — Jun.2019-Aug.2019
- Courses: Intro Human Nutrition, Neuroscience: Exploring the Brain

Research and Teaching Experience

Biostatistics Department – School of Public Health - University of Michigan — Ann Arbor, MI
Graduate Student Instructor for BIOSTAT601 (Probability and Distribution Theory) — Aug.2024-Now
- Grade assignments, quizzes, and exams for a class of over 130 students, ensuring fair assessment of students' understanding.
- Conduct office hours for over 130 students to address their questions and provide additional support outside of class time to help students understand complex statistical concepts.
- Coordinate with faculty to identify areas where students need additional support. Create supplementary instructional materials.

Human Genetics Department - Medical School - University of Michigan — Ann Arbor, MI
Research Assistant (Advisor: Professor Xinjun Zhang) — Jun.2024-Sep.2024
- Utilized machine learning and deep learning models (e.g. CNN, GAN, XGBoost) on both simulated gene variation data and its extracted machine learning features to detect genomic regions enriched with recessive mutations across different populations, evaluated by simulation study and analyses on empirical data results.
- Implemented techniques to address both column and row permutation (unsorted) variability in the dataset, ensuring robust detection of mutation-enriched regions despite structural inconsistencies, thereby improving the reliability and reproducibility of model predictions.
- Addressed challenges posed by the unique nature of genetic data and complex genotype-phenotype relationships (e.g., high dimensionality and complexity; zero-padding and overfitting).

Institute for Social Research - University of Michigan — Ann Arbor, MI
Research Assistant (Advisor: Professor Wei Zhao) — May.2024-Aug.2024
- Focused on constructing Polygenic Risk Scores (PRS) using Genome-Wide Association Study (GWAS) data.
- Investigated the relationship between the combined influence of genetics and environmental factors in the fields of depression, anxiety, education attainment, cognition performance, BMI, and height.
- Handled large genomic datasets, performed quality control by summary statistics, and applied advanced statistical models to derive PRS across ancestry populations.

Research Projects

Department of Computational Medicine & Bioinformatics - Medical School - University of Michigan — Ann Arbor, MI
Type 1 diabetes soft clustering Project (Advisor: Professor Stephen CJ Parker) — Oct.2024-Now
- Integrated 738 genome-wide association study (GWAS) summary statistics for various traits including immune cell phenotypes, T1D traits, and autoimmune traits, aligning SNP IDs.
- Utilized soft clustering methods including Bayesian Non-negative Matrix Factorization (bNMF) clustering. Plan to explore tree-based models, Bayesian models, and Fuzzy C-means clustering methods, as well as the deep learning model designed for soft clustering.

Biostatistics Department – School of Public Health - University of Michigan — Ann Arbor, MI
Mendelian Randomization Project – independent-study course project (Advisor: Professor Xiang Zhou) — Oct.2024-Dec.2024
- Solved the low-power issue in a Likelihood-based Mendelian Randomization model (Yuan et al., 2022) for binary treatments and outcomes, which is designed for both automated instrument selection and horizontal pleiotropy modeling.
- Address the uncorrelated and correlated horizontal pleiotropy for both binary exposure and binary outcome considering the effects of instruments on the outcome via continuous risk factors.
- Conducted several two-sample simulation studies and introduce latent variables assumed following a truncated normal distribution for inference of true distribution of binary phenotype variables and causal effects of the exposure on the outcome.

R package: LingxuanZ/OutsingleR — Ann Arbor, MI
Coauthor: Lingxuan Zhu, Yuchen Lei, Kevin Jin — Oct.2023-Dec.2023
- Developed R package with additional optimizations for the Outsingle algorithm, which only has the Python script previously.
  - The algorithm, OutSingle, proposed by Salkovic et al, is designed to detect the outliers in the RNA-Seq data.
- Achieved approximately 2.15x faster processing speed on the Kremer-119 dataset and 2.05x faster processing speed on the GTEX-249 dataset compared to the original Python implementation.

New York University — New York, NY
Financial Engineering Project (Advisor: Professor Miquel Alonso) — Jul.2021-Oct.2021

- Applied machine learning and time series models in quantitative finance to analyze the extreme downside of the airline industry in the COVID-19 period and predict airline stocks' returns.

PROFESSIONAL & WORK EXPERIENCE

Eastern Spring Capital Beijing, China
Quantitative Researcher Intern Jul.2022-Aug.2022

- Created web scrawling script using Python to collect data and information of target companies listed on Shanghai Stock Exchange and Shenzhen Stock Exchange, which helped team to track target companies' conditions, trends, and events such as stock holdings and daily issuance of convertible bonds.
- Leveraged Python to research the option pricing convertible bond strategy, compared binary tree method and Monte Carlo models, designed algorithm, and performed back test for buy and sell signals to guarantee the fulfillment of annual investment return goals.
- Built and tested Barra Hedge Fund Model to automatically calculate stock selection and head risks.

Desong Investment Beijing, China
Intern Investment Analyst Apr.2022-Jul.2022

- Conducted independently research on healthcare industry sectors such as rehabilitation, brain-machine interface, and digital treatment, traced real-time policies, index, and other data to analyze industry trend and identify investment opportunities, completed investment report for further decisions making.
- Researched target healthcare companies, performed exploratory analyses on Alzheimer's disease detection using peripheral blood antibody test, contributing to market assessment and decision of investing on a related company.
- Wrote fund prospectus, prepared individualized roadshow materials according to investment preferences of clients.

Green Pine Capital Partners Shenzhen, China
Intern Investment Analyst Dec.2021-Mar.2022

- Collaborated with team to conduct research on solid-state batteries industry and segment sectors such as lithium battery cathode materials, diamond cultivation, cloud computing and edge computing, completed research report.
- Performed competitor analysis, technical comparison, profitability evaluation, etc. on target companies; coordinated expert and enterprise interviews to support project due diligence and preliminary assessment.

Huatai Securities Remote working, China
Intern Financial Engineering Assistant Aug.2021-Nov.2021

- Collected and sorted out data of leading companies of multiple industry chain (non-ferrous metals, coal, retail, etc.), analyzed their market shares and competitiveness in local and foreign markets.
- Mined and processed bond transaction data of multiple industries, calculated bond data characteristics, analyzed and visualized bond characteristics distribution of different industries.

China Ping An Property Insurance Co., LTD Beijing, China
Financial Management Intern Jun.2021-Aug.2021

- Performed financial reporting and processed financial data to identify unusual items and figure out reasons.
- Responsible for domestic and foreign bill processing and declaration work,

Wanlian Securities Shenzhen, China
Intern TMT Researcher Mar.2021-Jun.2021

- Leveraged Wind financial terminal to collect financial and operation data of listed companies in the TMT industry, processed these data to analyze data transformation of different time nodes, collaborated with team to complete company valuation report, company reviews, industry research, and other research materials.
- Attended teleconference and web conference, organized meeting minutes and research materials.

BOC International (China) Co., Ltd Beijing, China
Intern of Bond Strategy Client Department Jun.2020-Aug.2020

- Carried out early-stage investment research and project assessment, collected and sorted out data and working papers for the operation of bond business.
- Communicated and coordinated cross-functional divisions to guarantee project operation and compliance management.

ADDITIONAL

- **Technical (Ranked by Proficiency):** Python, R, Linux (Bash), Rcpp, C++, STATA, MATLAB, Wind, Office Suite

EXPERIENCE

Turtle platform Shenzhen, China
Co-founder Sep.2019-Jul.2021

- Platform Details: Turtle platform is a start of my business. Its main value is to integrate and share high-quality summer school information, comments from previous schoolmates and tips for studying abroad. Its adjunctive function is to recommend comfortable rentals nearby the colleges, usually in the U.S. and UK.
- Responsibility: reasonably planning the development orientation of the platform; branding and project planning; cost budgeting and find new way to profit; platform operating; survey of industry activity and summer school information collection.

Fu Xing Hospital of Capital Medical University Beijing, China
End-of-life care volunteer June.2022-Aug.2022

- Job Details: To provide support and companionship physically and emotionally to help patients go through the last part of life.
- Responsibility: 1) Understand and help patients address various physiological needs to eliminate pains; 2) Show concern for them: to give ear to and chat with patients to help then release from the fear of death; to guide their mental states towards a calm mood to face the impending death; to make them more comfortable and make them feel self-esteem and a sense of fullness about life.