Taoyi(Jasper) Chen

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EDUCATION

University of Michigan - Ann Arbor **Aug 2024 - Jun 2026**
Master of Science in Quantitative Finance and Risk Management, GPA: 3.96/4.0 *Ann Arbor, US*

University of Michigan - Ann Arbor **Aug 2025 - Jun 2026**
Master of Science in Applied Statistics, GPA: 4.0/4.0 *Ann Arbor, US*

Wuhan University **Sep 2020 - Jun 2024**
Bachelor of Science in Mathematics & Bachelor of Arts in Finance, GPA: 3.6/4.0 *Wuhan, China*

SKILLS & COURSEWORK

Mathematics: Linear Algebra, Calculus, Real Analysis, Stochastic Calculus, Linear Programming
Statistics: Statistical Inference, Probability, Statistical Learning, Stochastic Process, Time Series Analysis
Programming: Python, R , LaTeX, Git
Finance: Microeconomics, Econometrics, Behavioral Economics, Financial Mathematics

COURSE PROJECTS

High-dimensional factor analysis with network-linked data **University of Michigan-Ann Arbor**
STATS 601: Advanced Statistical Learning (Ph.D. level) *March 2025 - May 2025*

- **Topics:** factor analysis, latent variable models, spectral embedding, expectation–maximization (EM) algorithms, asymptotic theory, Monte Carlo simulation.
- **Description:** Implemented the proposed estimation and hypothesis testing procedures for the generalized factor model on network-linked data. Conducted comprehensive simulations to evaluate estimation accuracy, verify asymptotic consistency, and analyze the effects of network density and signal strength.(Project Report available here)

RESEARCH EXPERIENCES

Core Member, Research Group of Prof. Gongjun Xu **University of Michigan - Ann Arbor**
Multivariate Item Response Theory with generative model *May 2025 - present*

- **Topics:** Multidimensional Item Response Theory(MIRT), generative model, variational inference, normalizing flows, latent variable model, engression, EM algorithm
- **Description:** Developed a generative framework for multidimensional IRT combining variational inference, and normalizing flow priors to flexibly model latent abilities. Implemented simulation studies under various latent distributions and sparsity structures to evaluate estimation accuracy and identifiability. Demonstrated improved recovery of latent representations and robustness compared to classical EM, MCEM and MHRM methods.

Research with Prof Bernardo Modenesi **University of Michigan - Ann Arbor, MIDAS**
Inference-Based and Model-Agnostic Bias Detection Pipeline *Oct 2024 - present*

- **Topics:** Individual fairness, causal machine learning, model ensemble, bayesian hierarchical clustering, counterfactual bias curve
- **Description:** Developed a causal and ensemble-based framework inspired by individual fairness to evaluate ML model bias. The method combines causal ML with random forest and Bayesian network clustering to test whether similar observations are treated similarly. It is model-agnostic, assumption-light, and provides interpretable statistical inference through a unified p-value.(Poster at Society for Causal Inference)

AWARDS & HONORS

2025 Quant Program Merit Scholarship
2021,2022 Scholarship at WHU

PRESENTATIONS & PROFESSIONAL EXPERIENCE

Society for Causal Inference Conference (2025) Poster Presenter
ICRL 2026 Ad-Hoc referee

REFERENCES

Prof. Gongjun Xu (University of Michigan) gongjun@umich.edu
Prof. Bernardo Modenesi (University of Utah) bernardo.modenesi@utah.edu