Yuchen Xu

University of California, Los Angeles
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EDUCATION

2018.08 - 2023.08 Ph.D. in Statistics & Data Science
Cornell University, Ithaca, NY

2014.09 - 2018.06 B.S. in Mathematics & Applied Mathematics, Zhiyuan Honored Program
Shanghai Jiao Tong University, Shanghai, China

Fall 2017 Research Intern Exchange
Center for Applied Mathematics, Cornell University, Ithaca, NY

August 2016 Summer Course on Partial Differential Equations
Hertford College, Oxford University, Oxford, UK

RESEARCH THEORY & METHODS

Time Series Analysis:
- Panel Time Series
- (Hidden) Markov model
- Changepoints

Multivariate Analysis:
- Joint matrix diagonalization
- Blind Source Separation (BSS)
- Tensor decomposition

Image Analysis:
- Blob detection
- Ridge detection

RESEARCH APPLICATIONS

- Financial Econometrics
- Medical Images and Signals
- Nanoparticles
- Molecular Dynamics
- Geology

ACADEMIC EMPLOYMENT

2023.09 - Present Postdoctoral Scholar
Department of Statistics & Data Science, University of California, Los Angeles
Advisor: Prof. George Michailidis

2019 - 2023 Graduate Research & Teaching Assistant
Department of Statistics & Data Science, Cornell University

RESEARCH EXPERIENCE

2023 - Present George Michailidis Group, UCLA
Advisor: Prof. George Michailidis
Tasks: Panel data statistical analysis.

2022 - Present Department of Surgery, Icahn School of Medicine at Mount Sinai Hospital
Advisor: Prof. David S. Matteson
Tasks: Predicting thyroid cancer recurrence, w/ Denise Lee, MD.

2021 - Present Enterprise Heart Failure Program, New York-Presbyterian (NYP) Hospital
Advisor: Prof. Martin Wells
Tasks: Heart failure inference from ECG data, w/ Ashley N. Beecy, MD.

2019 - Present Atomic-Level Structural Dynamics in Catalysts (ALSDC) Group
Advisor: Prof. David S. Matteson
Tasks: Clustering nanoparticle structures, w/ Prof. Roberto Rivera;
Extraction of TEM atomic columns, w/ Prof. Peter A. Crozier;
Estimating transition rate matrices, w/ Prof. Mahmoud Moradi.

2018 - Present Matteson Lab, Cornell University
Advisor: Prof. David S. Matteson
Tasks: Testing simultaneous diagonalizability.

PUBLICATIONS[1]

Xu,Y., Düker, M.-C., and Matteson, D. S., "Testing simultaneous diagonalizability," Journal of the American Statistical Association, 2023. DOI: 10.1080/01621459.2023.2202435. [Online]. Available: https://doi.org/10.1080/01621459.2023.2202435.

*Manzorro, R., *Xu,Y., Vincent, J. L., Rivera, R., Matteson, D. S., and Crozier, P. A., "Exploring blob detection to determine atomic column positions and intensities in time-resolved TEM images with ultra-low signal-to-noise," Microscopy and Microanalysis, vol. 28, no. 6, pp. 1917–1930, Mar. 2022. DOI: 10.1017/s1431927622000356. [Online]. Available: https://doi.org/10.1017%2Fs1431927622000356,

- The Most Outstanding Students Awards, Bronze Medal, UPSTAT 2021 Conference.

Thomas, A. M., Crozier, P. A., Xu,Y., and Matteson, D. S., "Detection and hypothesis testing of features in extremely noisy image series using topological data analysis, with applications to nanoparticle videos," Technometrics, 2023. DOI: 10.1080/00401706.2023.2203744. [Online]. Available: https://doi.org/10.1080/00401706.2023.2203744.

Calabro, C., Sadhu, R., Xu, Y., Aprea, M., Guarino, C., and Cazer, C. L., "Longitudinal antimicrobial susceptibility trends of canine Staphylococcus pseudintermedius," Preventive Veterinary Medicine, vol. 226, p. 106 170, May 2024, ISSN: 0167-5877. DOI: 10.1016/j.prevetmed.2024.106170. [Online]. Available: https://doi.org/10.1016/j.prevetmed.2024.106170.

Goolsby, C., Losey, J., Xu,Y., Düker, M.-C., Sherman, M. G., Matteson, D. S., and Moradi, M., "Addressing the embeddability problem in transition rate estimation," Journal of Pyhsical Chemistry A, vol. 127, no. 27, pp. 5745–5759, 2023, PMID: 37381078. DOI: 10.1021/acs.jpca.3c01367. [Online]. Available: https://doi.org/10.1021/acs.jpca.3c01367.

MANUSCRIPTS UNDER REVIEW OR REVISION

Xu,Y., Thomas, A. M., Crozier, P. A., and Matteson, D. S., "Dynamic Atomic Column Detection in Transmission Electron Microscopy Videos via Ridge Estimation," Resubmitted to IEEE Transactions on Image Processing, 2024. DOI: 10.48550/arXiv.2302.00816. [Online]. Available: https://arxiv.org/abs/2302.00816,

- The First-Place Winner, Best Student Paper Competition Case Studies and Applications track, Statistical Methods in Imaging Conference 2023.
- The Best Student Poster Award, 2022 IEEE Western New York Image and Signal Processing Workshop (WNYISPW).

[1] * First authors contributed equally.

Thomas, A. M., Lin, A. C., Deng, G., Xu, Y., Ranvier, G. F., Taye, A., Matteson, D. S., and Lee, D., A proof-of-concept investigation into predicting follicular carcinoma on ultrasound using topological data analysis and radiomics, Jul. 2024. DOI: 10.1101/2023.10.18.23297210. [Online]. Available: https://doi.org/10.1101/2023.10.18.23297210.

SOFTWARE

R package eigTest available on Github: Jointly Estimate and Test for Common Eigenvectors.
R package PVAR.FiNNO available on Github: Estimate Panel Vector Auto-Regression (PVAR) model with Fixed-Nuclear-Norm-Optimization.

PRESENTATIONS

Joint Learning of Panel VAR models with Low Rank and Sparse Structure, Invited Session: Analysis of High Dimensional Data with Complex Structure, The Conference on Statistical Learning and Data Science (SLDS), Newport Beach, CA, Nov. 2024.

Joint Learning of Panel VAR models with Low Rank and Sparse Structure, Business and Economic Statistics Section, Poster Session, Joint Statistical Meeting (JSM), Portland, OR, Aug. 2024.

Testing Simultaneous Diagonalizability, Conference on Advances in Time Series Analysis, Speedy Session, Chicago, IL, May 2023.

Dynamic Atomic Column Detection in Transmission Electron Microscopy Videos via Ridge Estimation, The Statistical Methods in Imaging Conference 2023, Minneapolis, MN, May 2023.

Non-parametric ridge recovery of TEM image series given temporal parameterization, 2022 IEEE Western New York Image and Signal Processing Workshop (WNYISPW), (Hybrid) Rochester, NY, Nov. 2022.

Non-parametric ridge recovery of TEM image series given temporal parameterization, Science-Integrated Statistical Learning Section, 2022 INFORMS Annual Meeting, Indianapolis, IN, Oct. 2022.

Recording atomic column positions and intensities via Blob Detection in noise-degraded TEM frames, Data Science in Science Minisymposia, The 37th SIDIM, (Virtual) Puerto Rico, Feb. 2022.

Recording atomic column positions and intensities via Blob Detection in noise-degraded TEM frames, UPSTAT 2021 Conference, (Virtual) Rochester, NY, Apr. 2021.

Testing Simultaneous Diagonalizability, Cornell Celebration of Statistics and Data Science, Ithaca, NY, Sep. 2019.

Testing Simultaneous Diagonalizability, Business and Economic Statistics Section, Speed Session, Joint Statistical Meeting (JSM), Denver, CO, Jul. 2019.

LINKS

Website	Github	LinkedIn	Google Scholar	ORCID

SKILLS

Programming:	R	Python	Matlab	LaTeX
	SQL	AWS & Azure	Stan	Java
Language:	English		Mandarin	

TEACHING EXPERIENCE

Spring 2023 @ Cornell	Understanding Machine Learning Instructor: Andrew M. Thomas	Teaching Assistant STSCI 4750
Fall 2021 @ Cornell	Operations Research Tools for Financial Engineering Instructor: David Ruppert	Teaching Assistant STSCI 4630
Spring 2021 @ Cornell	Statistics for Financial Engineering Instructor: David S. Matteson	Teaching Assistant STSCI 5640
Fall 2020 @ Cornell	Statistical Sampling Instructor: Thomas DiCiccio	Teaching Assistant STSCI 3100
Spring 2020 @ Cornell	Basic Probability Instructor: Laurent Saloff-Coste	Teaching Assistant MATH 4710
Fall 2019 @ Cornell	Probability Models and Inference Instructor: Florentina Bunea	Teaching assistant STSCI 3080

SERVICE

Since:	Role
October 2023	Associate Editor for the journal Data Science in Science
October 2024	Reviewer for the Journal of Time Series Analysis
July 2023	Reviewer for the Journal of Computational and Graphical Statistics
January 2023	Reviewer for the Journal of Service Research.
November 2021	Reviewer for the Journal of Econometrics.
January 2021	Reviewer for the Best Student Paper Competition of Joint Statistical Meeting (JSM) Business and Economic Statistics Section (B&E).

INDUSTRY EXPERIENCE

May 2022 — — Aug 2022
Data Scientist Intern
Amazon Web Services (AWS), Seattle, WA
Tasks: Modeling efficacy for internal IT-Services products;
Optimizing data aggregation and interpretation logics.

Mar 2018 — — May 2018
Algorithm & Data Science Intern
China Appraisal Association Data Analysis (CAAD), Shanghai, China
Tasks: Regressing and predicting real estate appraisals;
Optimizing address search algorithms.