

# Yuchen Xu

University of California, Los Angeles  
Department of Statistics & Data Science, Los Angeles, CA 90095

yuchenxu95@ucla.edu  
(+1)6072621106

## EDUCATION

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

2014.09 B.S. in Mathematics & Applied Mathematics, Zhiyuan Honored Program  
- 2018.06 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

<b>Time Series Analysis:</b>	<ul style="list-style-type: none"> <li>• Panel Time Series</li> <li>• (Hidden) Markov model</li> </ul>	<ul style="list-style-type: none"> <li>• Changepoints</li> <li>• Blind Source Separation (BSS)</li> </ul>
<b>Multivariate Analysis:</b>	<ul style="list-style-type: none"> <li>• Joint matrix diagonalization</li> </ul>	<ul style="list-style-type: none"> <li>• Tensor decomposition</li> </ul>
<b>Image Analysis:</b>	<ul style="list-style-type: none"> <li>• Blob detection</li> </ul>	<ul style="list-style-type: none"> <li>• Ridge detection</li> </ul>

## 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 using ECG data, w/ Edward F. Lin, 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<sup>1</sup>

### Peer Reviewed Manuscripts

**Xu,Y.**, Düker, M.-C., and Matteson, D. S., "Testing simultaneous diagonalizability," *Journal of the American Statistical Association*, vol. 119, no. 546, pp. 1513–1525, Apr. 2023. DOI: 10.1080/01621459.2023.2202435. [Online]. Available: <https://doi.org/10.1080/01621459.2023.2202435>.

**Xu,Y.**, Thomas, A. M., Crozier, P. A., and Matteson, D. S., "Dynamic Atomic Column Detection in Transmission Electron Microscopy Videos via Ridge Estimation," *IEEE Transactions on Image Processing*, Feb. 2025. DOI: 10.1109/TIP.2025.3543138. [Online]. Available: <https://doi.org/10.1109/tip.2025.3543138>,

◦ *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).*

\*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/s1431927622000356>,

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

Thomas, A. M., Crozier, P. A., **Xu,Y.**, and Matteson, D. S., "Feature Detection and Hypothesis Testing for Extremely Noisy Nanoparticle Images using Topological Data Analysis," *Technometrics*, vol. 65, no. 4, pp. 590–603, Oct. 2023. DOI: 10.1080/00401706.2023.2203744. [Online]. Available: <https://doi.org/10.1080/00401706.2023.2203744>.

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 Physical Chemistry A*, vol. 127, no. 27, pp. 5745–5759, Jul. 2023. DOI: 10.1021/acs.jpca.3c01367. [Online]. Available: <https://doi.org/10.1021/acs.jpca.3c01367>.

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. 106170, May 2024. DOI: 10.1016/j.prevetmed.2024.106170. [Online]. Available: <https://doi.org/10.1016/j.prevetmed.2024.106170>.

<sup>1</sup>\* 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," *Imaging*, Feb. 2025. DOI: 10.1556/1647.2025.00256. [Online]. Available: <https://doi.org/10.1556/1647.2025.00256>.

## In Prep

**Xu, Y.** and Michailidis, G., "Joint Learning of Panel VAR models with Low Rank and Sparse Structure," 2025.

**Xu, Y.**, Lin, E. F., and Wells, M., "Catherization Classification with ECG Waveforms," 2025.

## 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*, Department Seminar: the University of California, Santa Cruz, The department of Statistics, Santa Cruz, CA, Jan. 2025.

*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*, UP-STAT 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

<b>Website</b>	<b>Github</b>	<b>LinkedIn</b>	<b>Google Scholar</b>	<b>ORCID</b>
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**SKILLS**

<b>Programming:</b>	R	Python	Matlab	L <sup>A</sup> T <sub>E</sub> X
	SQL	AWS & Azure	Stan	Java
<b>Language:</b>	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
December 2024	Reviewer for the IEEE Transactions on Signal Processing
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.