Haotian Xu

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Education

Ph.D in Statistics, University of Geneva, Switzerland — 08/2015-07/2021
- Thesis: Contributions to time series analysis
- Advisor: Prof. Maria-Pia Victoria-Feser, Prof. Stéphane Guerrier

M.Sc in Statistics, University of Illinois at Urbana-Champaign, USA — 01/2014-05/2015

M.Sc in Applied Statistics, Dongbei University of Finance and Economics, China — 09/2011-07/2013
- Thesis: Bayesian analysis for ordinal categorical data

Bachelor in Statistics, Anhui University of Finance and Economics, China — 09/2007-07/2011
- Thesis: Optimization of hospital beds arrangement based on Poisson Process

Academic Position

Assistant Professor (Harrison Early Career), University of Warwick, UK — 09/2023-

Postdoctoral Researcher, The Pennsylvania State University, USA — 10/2022-08/2023
- SNSF Postdoc.Mobility Fellowship
- Advisor: Prof. Runze Li

Postdoctoral Researcher, Université Catholique de Louvain, Belgium — 06/2022-09/2022
- SNSF Postdoc.Mobility Fellowship
- Advisor: Prof. Johan Segers

Postdoctoral Researcher, University of Warwick, UK — 08/2021-05/2022
- Advisor: Prof. Yi Yu

Research interests

Time series, change-point problems, high-dimensional statistics, robust statistics.

Publications

Padilla, C.M.M., **Xu, H.**, Wang, D., Padilla, O.H.M., & Yu, Y., "*Change point detection and inference in multivariable nonparametric models under mixing conditions*", NeurIPS, 2023.

Yu, Y., Chatterjee S., & **Xu, H.**, "*Localising change points in piecewise polynomials of general degrees*", Electronic Journal of Statistics, 16(1), 1855-1890, 2022.

Guerrier, S., Molinari, R., Victoria-Feser, M. P., & **Xu, H.**, "*Robust two-step wavelet-based inference for time series models*", Journal of the American Statistical Association, 117(540), 1996-2013, 2022. (alphabetical order)

Guerrier, S., Jurado, J., Khaghani, M., Bakalli, G., Karemera, M., Molinari, R., Orso, S., Raquet, J., Kabban, C.M.S., Skaloud, J., **Xu, H.**, & Zhang, Y., "*Wavelet-based moment-matching techniques for inertial sensor calibration*", IEEE Transactions on Instrumentation and Measurement, *69*(10), 7542-7551, 2020.

Xu, H., Guerrier, S., Molinari, R., & Karemera, M., "*Multivariate signal modeling with applications to inertial sensor calibration*", IEEE Transactions on Signal Processing, *67*(19), 5143-5152, 2019.

Branca, M., Orso, S., Molinari, R., **Xu, H.**, Guerrier, S., Zhang, Y., & Mili, N., "*Is nonmetastatic cutaneous melanoma predictable through genomic biomarkers?*", Melanoma Research, *28*(1), 21-29, 2018.

Xu, H., Guerrier, S., Molinari, R., & Zhang, Y., "*A study of the Allan variance for constant-mean non-stationary processes*", IEEE Signal Processing Letters, *24*(8), 1257-1260, 2017.

Preprints

Xu, H., Wang, D., Zhao, Z., & Yu, Y., "*Change point inference in high-dimensional regression models under temporal dependence*", arXiv preprint, 2022. (under revision)

Xu, H., Dubey, P., & Yu, Y., "*Online network change point detection with missing values and temporal dependence*", arXiv preprint, 2023. (submitted)

Xu, H., Guerrier, S., Li, R., & Ke, Y., "*Nonasymptotic theories for tail-robust autocovariance matrix estimation methods*". (preparing for submission)

Xu, H., Xiao, D., & Ke, Y., "*Multiple change points detection problems for high-dimensional time series*". (preparing for submission)

Proceedings

Zhang, Y., **Xu, H.**, Radi, A., Molinari, R., Guerrier, S., Karemera, M., & El-Sheimy, N., "*An optimal virtual inertial sensor framework using wavelet cross covariance*", In 2018 IEEE/ION Position, Location and Navigation Symposium (PLANS) (1342-1350).

Ebooks

Guerrier, S., Molinari, R., **Xu, H.** & Zhang, Y., "*Applied Time Series Analysis with R*", full text: `https://smac-group.github.io/ts/`.

Statistical Softwares

"changepoints" - R package: performs a series of offline and/or online change-point detection algorithms for numerous settings. Available on CRAN. `https://github.com/HaotianXu/changepoints`.

"rcov" - R package: collection of tools for estimating robust autocovariance matrix for high-dimensional time series. `https://github.com/HaotianXu/rcov`.

"avar" - R package: implements the allan variance and allan variance linear regression estimator for time series models. Available on CRAN. `https://github.com/SMAC-Group/avar`.

Grant & Award

Swiss National Science Foundation (SNSF) Postdoc.Mobility Fellowship (CHF 98,600, 24-month)

Financial support for conference, Société Académique de Genève (CHF 1200)

First Prize of China Undergraduate Mathematical Contest in Modeling, 2010

Invited Talks

"*Change point localisation and inference in high-dimensional regression models under dependence*", Statistics Seminar, Fudan University, China, 08/2023.

"*Online network change point detection with missing values and temporal dependence*", Workshop on Changepoint Analysis, University of Warwick, UK, 05/2023.

"*Online network change point detection with missing values*", StatScale Seminar, online, 02/2023.

"*Change point localisation and inference in high-dimensional regression models under dependence*", SMAC Talk, Penn State University, USA, 04/2023.

"*Change point localisation and inference in high-dimensional regression models under dependence*", Statistics Seminar, University of Notre Dame, USA, 11/2022.

"*Change point localisation and inference in high-dimensional regression models under dependence*", ICMS workshop: Structural Breaks and Shape Constraints, Edinburgh, 05/2022.

"*Robust Estimation of Large Autocovariance Matrices*", 2021 ICSA Applied Statistics Symposium, online, 09/2021.

"*Robust Estimation of Large Autocovariance Matrices*", Statistics seminar, Université catholique de Louvain, 05/2021.

"*Long-run Covariance Matrix Estimator for High-dimensional Time Series*", The 3rd International Conference on Econometrics and Statistics, National Chung Hsing University, Taiwan, 06/2019.

"*A GMWM-based Inference for Correlated Latent Processes*", 2017 IMS-China International Conference on Statistics and Probability, Guangxi University For Nationalities, China, 06/2017.

Referee Experience

Annals of Applied Statistics; Bernoulli; Biometrika; Stat; Statistica Sinica; Journal of Statistical Software; AISTATS

Academic Visits

Visiting student at University of Illinois at Urbana-Champaign, Feb–Jun 2016, Feb-May 2017

Visiting student at Penn State University, Feb–Jun 2018

Teaching experience

Instructor:

- Elementary Mathematical Statistics (undergraduate), Penn State University, Spring 2023

Teaching Assistant: responsible for giving weekly recitation lectures/office hours, exam preparation and grading.

- Statistical Modeling (undergraduate), University of Geneva, Fall 2015-2020

- Business Analytics (undergraduate), University of Geneva, Fall 2016-2017

- Numerical Methods (undergraduate), University of Geneva, Fall 2020

- Statistics I (undergraduate), University of Geneva, Fall 2015-2020

- Mixed Linear Models (graduate), University of Geneva, Fall 2016-2019

Skills

Languages: Chinese (native); English (fluent); French (elementary).

Computer Programming and Statistical Software: C++, R, SAS, Matlab, Python

Professional Experience

Statistician, IMS Health, Beijing, China, 10/2013–01/2014: Design statistical methods to investigate the causes of changes in trend of Rx data in mail order, retail order and longtime-care order. Programmed SAS, SQL and JCL code to manipulate Rx data and generate reproducible report.

References

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