Yuming Zhang

Last update: April 2024

Contact

Address: Bd du Pont d'Arve 40 (Uni Mail)
1205 Geneva, Switzerland
Phone: +41 22 379 89 13
Email: Yuming.Zhang@unige.ch
Homepage: `yumingzhang.com`

Education

PhD in Statistics, University of Geneva, Switzerland February 2019 - July 2024 (expected)

- Advisor: Prof. Maria-Pia Victoria-Feser
- I was a PhD student in Statistics at the Pennsylvania State University, USA, from August 2017 to January 2019. During this period, I passed the Doctoral Candidacy Examination in May 2018. Then I transferred to the University of Geneva to continue my PhD studies.

BS in Mathematics and Statistics, University of Illinois at Urbana-Champaign, USA 2015 - 2017

- Grade: 3.97/4.0
- University Honors & Summa Cum Laude (top 3%)

Honors and Awards

- IMS Hannan Graduate Student Travel Award, Institute of Mathematical Statistics, 2024.
- ICSDS Student Travel Award, Institute of Mathematical Statistics, 2023.
- Subside Tremplin (granted amount: 31,349.50 CHF), University of Geneva, 2021 - 2022.
- Vollmer-Kleckner Scholarship in Science, Pennsylvania State University, 2018.
- University Graduate Fellowship, Pennsylvania State University, 2017 - 2018.
- Willaman Distinguished Graduate Fellowship in Statistics, Pennsylvania State University, 2017 - 2018.
- University Honors (Bronze Tablet), University of Illinois at Urbana-Champaign, 2017.
- Summa Cum Laude (College Latin Honors in College of Liberal Arts and Sciences), University of Illinois at Urbana-Champaign, 2017.
- Highest Distinction in Statistics and High Distinction in Mathematics, University of Illinois at Urbana-Champaign, 2017.
- Dean's List, University of Illinois at Urbana-Champaign, 2015 - 2017.

Journal Publications

Zhang, Y., Cucci, D. A., Molinari, R. & Guerrier, S. (2022). "*Scale-Wise Variance Minimization for Optimal Virtual Signals: An Approach for Redundant Gyroscopes*". IEEE Transactions on Signal Processing, 70, 5320-5333. Full text: link. Press release: link.

Khamma, T. R., **Zhang, Y.**, Guerrier, S. & Boubekri, M. (2020). "*Generalized Additive Models: An Efficient Method for Short-term Energy Prediction in Office Buildings*". Energy, 213, 118834. Full text: link.

Guerrier, S., Jurado, J., Khaghani, M., Bakalli, G., Karemera, M., Molinari, R., Orso, S., Raquet, J., Schubert, C., Skaloud, J., Xu, H. & **Zhang, Y.** (2020). "*Wavelet-Based Moment-Matching Techniques for Inertial Sensor Calibration*". IEEE Transactions on Instrumentation & Measurement, 69(10), 7542-7551. Full text: link.

Branca, M., Orso, S., Molinari, R., Xu, H., Guerrier, S., **Zhang, Y.** & Mili, N. (2018). "*Is Nonmetastatic Cutaneous Melanoma Predictable through Genomic Biomarkers?*". Melanoma Research, 28(1), 21-29. Full text: link.

Xu, H., Guerrier, S., Molinari, R. & **Zhang, Y.** (2017). "*A Study of the Allan Variance for Constant-Mean Nonstationary Processes*". IEEE Signal Processing Letters, 24(8), 1257-1260. Full text: link.

Conference Proceedings

Voirol, L., Guerrier, S., **Zhang, Y.**, Karemera, M. & Radi, A. (2020). "*Optimally Weighted Wavelet Variance-based Estimation for Inertial Sensor Stochastic Calibration*", in 12th International Conference on Electrical Engineering, Cairo, Egypt. Full text: link.

Khaghani, M., Guerrier, S., Skaloud, J. & **Zhang, Y.** (2019). "*Optimal Stochastic Sensor Error Modeling based on Actual Impact on Quality of GNSS-INS Integrated Navigation*", in Proceedings of the ION GNSS 2019, Miami, FL, USA. Full text: link.

Zhang, Y., Xu, H., Radi, A., Molinari, R., Guerrier, S., Karemera, M. & El-Sheimy, N. (2018). "*An Optimal Virtual Inertial Sensor Framework using Wavelet Cross Covariance*", in Proceedings of IEEE/ION PLANS 2018, Monterey, CA, USA. Full text: link.

Bakalli, G., Radi, A., Nassar, S., Guerrier, S., **Zhang, Y.** & Molinari, R. (2018). "*A Two-Step Computationally Efficient Procedure for IMU Classification and Calibration*", in Proceedings of IEEE/ION PLANS 2018, Monterey, CA, USA. Full text: link.

Presentations and Talks

Conference Presentations

"*Just Identified Indirect Inference Estimator: Accurate Inference through Bias Correction*", IMS International Conference on Statistics and Data Science (ICSDS), Lisbon, Portugal, December 2023 (Student Travel Award talk).

"*A Computationally Efficient Framework for Robust Estimation*", CFE-CMStatistics, Berlin, Germany, December 2023 (Invited talk).

"*A Computationally Efficient Framework for Robust Estimation*", International Conference on Robust Statistics (ICORS), Toulouse, France, May 2023.

"*A Flexible Bias Correction Method based on Inconsistent Estimators*", CFE-CMStatistics, Virtual Conference, December 2022.

"*Targeted Bias Correction for Parametric Models*", Bernoulli-IMS One World Symposium, Virtual Conference, August 2020.

"*Simulation-based Bias-reduced Robust Estimation in High Dimensional Settings*", Joint Statistical Meetings, Virtual Conference, August 2020.

"*A Study of Simulation Based Estimators for High Dimensional Generalized Linear Models*", 47th Annual Meeting of the Statistical Society of Canada, Calgary, Alberta, Canada, May 2019.

"*A Study of Simulation-Based Estimators in Logistic Regression and Negative Binomial Regression*", International Chinese Statistical Association Conference on Data Science, Jinghong, Yunnan, China, January 2019.

"*An Optimal Virtual Inertial Sensor Framework using Wavelet Cross Covariance*", IEEE/ION Position, Location and Navigation Symposium (PLANS), Monterey, CA, USA, April 2018.

Department Talks

"*A Flexible Bias Correction Method based on Inconsistent Estimators*", Laboratory of Epidemiology and Public Health, School of Public Health, Yale University, CT, USA, May 2022.

"*A Simulation-based Estimation Framework for Generalized Partially Linear Models*", Statistics and Data Science Seminar, Department of Mathematics and Statistics, Auburn University, AL, USA, May 2022.

"*A General Approach for Simulation-based Bias Correction in High Dimensional Settings*", Statistics and Data Science Seminar, Department of Mathematics and Statistics, Auburn University, AL, USA, February 2022.

"*A General Approach for Simulation-based Bias Correction in High Dimensional Settings*", Epidemiology and Biostatistics Research Seminar, School of Public Health, University of Illinois at Chicago, IL, USA, January 2022.

Software

"synimu" - R package: implements a non-parametric method that makes use of the wavelet cross-covariance at different scales to combine the measurements coming from an array of gyroscopes in order to deliver an optimal measurement signal. It also provides a rigorous non-parametric approach for the estimation of the asymptotic covariance matrix of the wavelet cross-covariance estimator. Joint work with Cucci, D. A., Xu, H., Guerrier, S. & Molinari, R.
More information: `https://yuming-zhang.github.io/synimu/`.

"simts" - R package: contains various tools for time series analysis. Indeed, this R package provides a series of tools to simulate, plot, estimate, select and forecast different time series models. It is originally conceived as a support to the online textbook "*Applied Time Series Analysis with R*". Joint work with Guerrier, S., Balamuta, J., Molinari, R. & Lee, J. Available on CRAN, downloads $\approx$ 6K/year.
More information: `https://cran.r-project.org/web/packages/simts/index.html`.

"wv" - R package: provides a series of tools to compute and plot quantities related to classical and robust wavelet variance for time series and regular lattices. Joint work with Guerrier, S., Balamuta, J., Lee, J. & Molinari, R. Available on CRAN, downloads $\approx$ 5K/year.
More information: `https://cran.r-project.org/web/packages/wv/index.html`.

"avar" - R package: implements the Allan variance and Allan variance linear regression estimator for latent time series models. Joint work with Guerrier, S., Balamuta, J., Bakalli, G., Molinari, R., Lee, J., Radi, A., Xu, H. & Claussen, N. Available on CRAN, downloads $\approx$ 6K/year.
More information: `https://cran.r-project.org/web/packages/avar/index.html`.

Teaching Activities

Summary by Institutions

University of Geneva, Switzerland

"*Introduction à la statistique*", teaching assistant, Spring 2024, undergraduate class.
"*Model Selection in High Dimensions*", teaching assistant, Spring 2023, Master-level class.
"*Modelling and Data Analysis for Pharmaceutical Sciences: from Molecules to Clinical Practice*", teaching assistant, Spring 2021 & Spring 2023, Master-level class.
"*Business Analytics*", teaching assistant, Fall 2020 & Fall 2021 & Fall 2022 & Fall 2023, undergraduate class.
"*Introduction to Data Science*", teaching assistant, Spring 2019 & Spring 2020 & Spring 2021, undergraduate class.

Shanghai International Studies University, China

"*Introduction to Statistics*", instructor, Winter 2020, PhD-level class.

Pennsylvania State University, USA

"*Applied Time Series Analysis (STAT 463)*", teaching assistant, Fall 2018, undergraduate class.
"*Applied Regression Analysis (STAT 462)*", teaching assistant, Summer 2018, undergraduate class.
"*Experimental Methods (STAT 401)*", teaching assistant, Summer 2018, undergraduate class.

University of Illinois at Urbana-Champaign, USA

"*Statistics and Probability II (STAT 410)*", teaching assistant, Spring 2017, undergraduate class.

"*Statistics and Probability I (STAT 400)*", teaching assistant, Fall 2016, undergraduate class.
"*Introductory Matrix Theory (MATH 225)*", teaching assistant, Fall 2016, undergraduate class.
"*Preparation for Calculus (MATH 115)*", teaching assistant, Fall 2015 & Spring 2016, undergraduate class.
"*Algebra (MATH 112)*", teaching assistant, Fall 2016, undergraduate class.

Teaching Materials

Interactive Websites:
Guerrier, S., Voirol, L. & **Zhang, Y.**, "*Introduction to Data Science with R*".
More information: `https://intro-to-ds.netlify.app/`.

Guerrier, S., Voirol, L. & **Zhang, Y.**, "*Data Analytics for Pharmaceutical Sciences*".
More information: `https://intro-data-analytics.netlify.app/`.

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

Teaching Recognition

Educational Innovations at University of Geneva awarded for the project "*Web Application*", joint work with Guerrier, S. & Voirol, L. More information:
`https://www.unige.ch/innovations-pedagogiques/innovations/application-web`.

Students Mentoring

- Ziyi Xuan, MS in Pharmacy, University of Geneva, 2021.

Personal Skills

Languages

- Chinese Mandarin: Fluent (mother tongue)
- Chinese Cantonese: Fluent (mother tongue)
- English: Fluent
- French: Intermediate

Computer Skills

- Extensive experience with R, GitHub, LaTeX.
- Experience with Python, Matlab, SAS.