Tianhai Zu

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Academic Appointment

Assistant Professor of Management Science and Statistics, University of Texas at SanAug 2023 - Present
Antonio

Education

Ph.D. Business Analytics, University of Cincinnati	May 2023
M.S. Finance, Pennsylvania State University	Dec 2015
B.S. Management Science, Southwestern University of Finance and Economics	Aug 2013

Research Interests

Machine Learning, Artificial Intelligence in Business, Healthcare Data Analytics, Ultra-high Dimensional Variable Selection, Dimension Reduction, Network Inference and Social Network Analysis, Big Data Technologies, Information Systems, Uncertainty in Financial Bankruptcy.

Journal Publications

All papers are downloadable here.

- Zu, T., Qin, Y. (2024), "Local Bootstrap for Networks," *Biometrika*, DOI: 10.1093/biomet/asae046.
- Zu, T., Green, B., Lian, H., Yu, Y. (2023), "Ultra-high Dimensional Quantile Regression for Longitudinal Data: an Application to Blood Pressure Analysis," *Journal of the American Statistical Association*, DOI: 10.1080/01621459.2022.2128806.
- Green, B., Lian, H., Yu, Y., Zu, T. (2023), "Semiparametric Penalized Quadratic Inference Functions for Correlated Data in Ultra-high Dimensions," *Journal of Multivariate Analysis*, DOI: 10.1016/j.jmva.2023.105175.
- Zu, T., Yu, Y. (2023), "GPLSIM: An R Package for Penalized Spline Estimation for Generalized Partially Linear Single-index Models," *R Journal*. Accepted R Package: GPLSIM.
- Green, B., Lian, H., Yu, Y., Zu, T. (2021), "Ultra High-Dimensional Semiparametric Longitudinal Data Analysis," *Biometrics*, 77, 3, 903–913. DOI: 10.1111/biom.13348.
- Zu, T., Yu, Y. (2021), "SIQR: An R Package for Single-index Quantile Regression," *R Journal*. Accepted R Package: SIQR.
- Srinivasan, SM., Sangwan, R., Neill, C., Zu, T. (2019), "Power of Predictive Analytics: Using Emotion Classification of Twitter Data for Predicting 2016 US Presidential Elections," *The Journal of Social Media in Society*, 8,1,211-230.

Papers under Review

- "geeVerse: Ultra-high Dimensional Heterogeneous Data Analysis with Generalized Estimating Equations," with Brittany Green and Yan Yu, under review at *Journal of Statistical Software*.

Research in Progress

- "Enhancing Bankruptcy Prediction: A Two-Layered Network Approach Using Latent Space Models," targeting *Management Science*.
- "Multivariate High Dimensional Binary/Matrix Response Regression," with Yan Yu and Heng Lian, targeting *Journal of the American Statistical Association*.

- "FDR control for high dimensional quantile variable selection," with Zhigen Zhao and Yan Yu, targeting *Journal of the American Statistical Association*.
- "Estimate Networks via Local Structure," with Yichen Qin, targeting *Electronic Journal of Statistics*.
- "Determinants of Corporate Bankruptcy: Identification and Uncertainty," with Yichen Qin and Yan Yu, targeting *Management Science*.
- "Municipal Securities and Bailouts," with Wenhan Yang, Zhenfeng Peng and Qiongwen Lei, targeting *Journal of Banking and Finance*.
- "Analyzing Conflicting Information via Multi-dimensional Textual Network Analysis Framework," with Zewei Lin, targeting *Management Science*.

Peer-reviewed Conference Publications

- Harrison, A., Samuel, B., Shan Z., Cook M., Zu T., Dawani D. (2019), "Learning to See the Hook: Comparing Phishing Training Approaches," *ICIS 2019 Proceedings*.

Book Chapters

- Qiu R.G., Zu T., Qian Y., Qiu L., Badr Y. (2019), "Leveraging Big Data Platform Technologies and Analytics to Enhance Smart City Mobility Services." In: Maglio P., Kieliszewski C., Spohrer J., Lyons K., Patrício L., Sawatani Y. (eds) *Handbook of Service Science, Volume II. Service Science: Research and Innovations in the Service Economy*. Springer, Cham.

Other Publications

- Srinivasan, SM., Sangwan, R., Neill, C., Zu, T. (2019), "Twitter data for predicting election results: insights from emotion classification," *IEEE Technology and Society Magazine*, 38,1,58-63.

Presentations

- "Enhancing Bankruptcy Prediction: A Two-Layered Network Approach Using Latent Space Models"
  - CFE-CMStatistics 2024, London, UK, 12/2024.
- "FDR Control for High Dimensional Quantile Regression"
  - 2024 Joint Statistical Meetings, Portland, OR, 08/2024.
  - New Researchers Conference 2024, Corvallis, OR, 08/2024.
  - Econometrics and Statistics (EcoSta 2024), Virtual, Beijing, China, 07/2024.
  - CFE-CMStatistics 2023, Virtual, Berlin, Germany, 12/2023.
- "Local Bootstrap for Network Data and Applications in Network Analysis"
  - The Alamo Symposium in Statistics, San Antonio, TX, 03/2023.
- "Ultra-high Dimensional Quantile Regression for Longitudinal Data: an Application to Blood Pressure Analysis"
  - The 53rd Annual Conference of the Decision Sciences Institute, Houston, TX, 11/2022.
  - INFORMS Annual Meetings, Indianapolis, IN, 10/2022.
  - Joint Statistical Meetings, Washington, D.C., 08/2022.
- "Analyzing Conflicting Information via Multi-dimensional Textual Network Analysis Framework," INFORMS Annual Meeting, Virtual, 11/2020.
- "Determinants of Corporate Bankruptcy: Identification, Uncertainty and Importance," INFORMS Annual Meeting, Seattle, WA, 10/2019; Joint Statistical Meetings, Denver, CO, 07/2019.

Awards and Honors

- Outstanding Teaching Award, Doctoral Student, Carl H. Lindner College of Business at University of Cincinnati, 2022.
- Outstanding Research Award, Doctoral Student, Carl H. Lindner College of Business at University of Cincinnati, 2022.
  - *First in college history to receive both awards at the same time, while each is intended to recognize only one candidate in the entire college.*
- Nittany AI Challenge selected project, university level, Pennsylvania State University, 2015.
- Best Research Poster, division level, Pennsylvania State University.
- Outstanding Achievement Award in M.S. in Finance, Pennsylvania State University (1/80).
- Outstanding Graduate Student, Southwestern University of Finance and Economics (1/55).

Teaching Interests

Business Analytics, Big Data Technologies, Databases, Machine Learning, Data Analytic Methods, Data Mining, Data Wrangling, Network Analysis, Text Mining.

Teaching Experience

Independent Instructor

2024 Fall	Data Mining for Business Analytics	Undergraudate	Eval: 4.63/5
2024 Fall	Data Exploration with Python	Undergraudate&Graduate	Eval: 4.87/5
2024 Spring	Data Management for BA	Undergraudate	Eval: 4.57/5
2023 Fall	Data Mining for Business Analytics	Undergraudate&Graduate	Eval: 3.62/5
2023 Fall	Data Exploration with Python	Undergraudate&Graduate	Eval: 4.89/5
2021 Spring	Data Wrangling (website)	M.S. Business Analytics	Eval: 7.6/8
2021 Summer	Data Wrangling (website)	M.S. Business Analytics	Eval: 7.8/8
2020 Fall	Data Wrangling (website)	M.S. Business Analytics	Eval: 7.9/8
2020 Spring	Data Analytics Methods (website)	M.S. Information Systems	Eval: 7.5/8

Recitation and Lab Instructor

2021 Spring	Linear Regression	M.S. Business Analytics
2019 Spring	Data Mining for BI	M.S. Information Systems
2018 Spring	Data Warehousing and BI	M.S. Information Systems
2018 Spring	Big Data Analytics (Workshop)	2018 Analytics Summit

Service

- Journal reviewer: Journal of the American Statistical Association, IEEE Transactions on Big Data, Canadian Journal of Statistics, Journal of Business & Economic Statistics, Journal of Computational and Graphical Statistics, Statistics & Computing, Journal of Data Science, Human-centric Computing and Information Science, Scientific Reports, The American Statistician.
- Peer-reviewed conference reviewer: International Conference on Information Systems (ICIS), Pre-ICIS SIGBPS Workshop 2018 on Blockchain and Smart Contract.
- Second reader of M.S. Business Analytics student capstone projects.
- Big data cluster manager, supported four big data analytics courses, three workshops and several case study projects.
- Vice-president & Co-founder, Penn State Great Valley Blue and White Investment Club.

Skills and Techniques

- Machine Learning and Text Mining: R, Octave/MATLAB, Python, TensorFlow, PyTorch, SAS, Weka.
- Big Data and Database: Java, Spark, Hadoop, Oracle, MySQL, NoSQL.
- Web Scraping: Scrapy, Selenium.
- Web Development: HTML, JavaScript, Node.js, PHP.
- R Packages Developed: SIQR, GPLSIM, local_boot.

Industry Experience

- Assistant Investment Analyst, Full-time, Orient Securities Company Limited, China, 2013-2014.
- Research Associate, Full-time, Pennsylvania State University, United States, 2015-2016.
- Financial and Risk Analyst, Full-time, Muliuniuma Financials, China, 2016-2017.

Professional Memberships

- Member, American Statistical Association (ASA).
- Member, Institute for Mathematical Statistics (IMS).
- Member, Association for Information Systems (AIS).
- Member, The Institute for Operations Research and the Management Sciences (INFORMS).
- Member, Chartered Financial Analyst Institute.