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Google Scholar
(updated April 16, 2022)

Ziwei Ma

Curriculum Vitae

Professional Experience

August 2020 – Present **Assistant Professor of Statistics**, *University of Tennessee at Chattanooga*.

August 2021 – Present **Biostatistician (part time)**, *University of Tennessee College of Medicine*.

January 2014 – May 2020 **Teaching/Research Assistant**, *New Mexico State University*.

Education

2015–2020 **Ph.D.**, *New Mexico State University*, Las Cruses, *Mathematics*.
Concentration: Mathematical Statistics

2014–2015 **Master's**, *New Mexico State University*, Las Cruses, *Mathematics*.

2004–2007 **Master's**, *Northwest University*, Xi'an, China, *Mathematics*.

2000–2004 **Bachelor's**, *Northwest University*, Xi'an, China, *Mathematics*.

Research Interests

Statistics Linear Model, Skew Normal Distribution, Inferential Models, Statistical Methodology, Clinic Trials

Applied Statistics Machine Learning in Engineering, Applications of Stochastic Differentiation Equations in Biology

Publications

Statistical Methodology

1. **Ma, Ziwei**, Chen, Ying-Ju, Wang, Tonghui and Liu, Jing (2020) "Inferences on location parameter in multivariate skew-normal family with unknown scale parameter", Communications in Statistics - Simulation and Computation, DOI:10.1080/03610918.2020.1772300
2. **Ma, Ziwei**, Wang, Tonghui. "The plausibility regions for shape parameter under multivariate skew normal (MSN) settings based on Inferential Models (IMs)" , International Journal of Intelligent Technologies and Applied Statistics, vol. 12, no. 1, (2019), 31-47. DOI:10.6148/IJITAS.201903_12(1).0003
3. Wang, Liang, Wang, Tonghui, Yan, Li, **Ma, Ziwei**. "Inference on the exponentiated uniform distribution under records", International Journal of Intelligent Technologies and Applied Statistics, vol. 12, no. 1, (2019), 67-98. DOI 10.6148/IJITAS.201903_12(1).0005

4. **Ma, Ziwei**, Chen, Ying-ju, Wang, Tonghui, Peng, Wuzhen. " Inferences on Location Parameters under Skew Normal Settings", in "Beyond Traditional Probabilistic Methods in Economics" (V. Kreinovich, N. Trung, and N. Thach Eds.). Springer Nature Switzerland, pp.146-162, (2019) DOI:10.1007/978-3-030-04200-4_11
5. **Ma, Ziwei**, Zhu, Xiaonan, Wang, Tonghui, and Autchariyapanitkul, Kittawit."Joint Plausibility Regions for Parameters of Skew Normal Family." In International Conference of the Thailand Econometrics Society, pp. 233-245. Springer, Cham, (2018) DOI:10.1007/978-3-319-70942-0_16
6. Zhu, Xiaonan, **Ma, Ziwei** , Wang, Tonghui, and Teetranont, Teerawut. "Plausibility Regions on the Skewness Parameter of Skew Normal Distributions based on Inferential Models." In Robustness in Econometrics, pp. 267-286. Springer, Cham, (2017). DOI:10.1007/978-3-319-50742-2_16

Distribution Theory

7. **Ma, Ziwei**, Wang, Tonghui, Li, Baokun, Xiaonan Zhu and yuede Ma, "The Decomposition of Quadratic Forms Under Matrix Variate Skew-Normal Distribution", In Behavioral Predictive Modeling in Economics (pp. 181-194). Springer, Cham. (2021)
8. **Ma, Ziwei**, Tian, Weizhong, Li, Baokun, and Wang, Tonghui ."The Decomposition of Quadratic Forms Under Skew Normal Settings." In International Conference of the Thailand Econometrics Society, pp. 222-232. Springer, Cham, (2018). DOI:10.1007/978-3-319-70942-0_15

Applied Math/Statistics

9. Li, Baokun, **Ma, Ziwei**, and Wang, Tonghui, "Find Trade Patterns in China's Stock Markets Using Data Mining Agents", In Behavioral Predictive Modeling in Economics (pp. 171-179). Springer, Cham. (2021)
10. Jiang, Hanwan, Zhan, Hanyu, **Ma, Ziwei**, and Jiang, Ruinian. (2020). Comparative study of three-dimensional stress and crack imaging in concrete by application of inverse algorithms to coda wave measurements. Sensors, 20(17), 4899
11. **Ma, Ziwei**, Ben Niu, Tuan Phan, Anne Stensjoen, Chibawanye Ene, Timothy Woodiwiss, Tonghui Wang, Philip Maini, Eric Hollan and Tian, Jianjun "Stochastic growth pattern of untreated human glioblastomas predicts the optimal time for surgery", Scientific Reports 10.1 (2020): 1-13.
12. Mu, Lei, Jia, Zhe, **Ma, Ziwei**, Shen, Fuhui, Sun, Yuekuo, and Zang, Yong . "A theoretical prediction framework for the construction of a fracture forming limit curve accounting for fracture pattern transition." International Journal of Plasticity (2020): 102706
13. Tang, Xiaochen, **Ma, Ziwei**, Hu, Qisong, Tang, Wei. "A Real-time arrhythmia heartbeats classification algorithm using parallel delta modulations and rotated linear-kernel Support Vector Machines", in IEEE Transactions on Biomedical Engineering, vol. 67, no. 4, pp. 978-986, (2020). DOI: 10.1109/TBME.2019.2926104
14. Du, Junli, Yuan, Zhifa, **Ma, Ziwei** , Song, Jiuzhou, Xie, Xiaoli, and Chen, Yulin. "KEGG-PATH: Kyoto encyclopedia of genes and genomes-based pathway analysis using a path analysis model." Molecular bioSystems 10, no. 9 (2014): 2441-2447. DOI:10.1039/c4mb00287c.

Submitted Manuscripts

15. "Inferences on the difference of location parameters under multivariate skew normal settings"
16. "The ECM estimation for the skew normal based stochastic frontier model"

In preparation

16. (with Dr. Tonghui Wang) "Inference on the coefficient of variation under skew-normal setting"
17. (with Dr. Tonghui Wang) "A Priori Procedure on location parameter under multivariate skew-

normal setting"

Grants

July 2022 – June 2023 **"Integrating Google Trends Analytic into Geographically Weighted Model of Vaccine Hesitancy"**, *Center of Excellence in Applied Computational Science and Engineering*, UTC internal grant program, co-PI, amount funded $ 95,577.

July 2021 – June 2022 **"Addressing sampling biases in genome-wide association study for SAR-CoV-2"**, *Center of Excellence in Applied Computational Science and Engineering*, UTC internal grant program, co-PI, amount funded $ 90,000.

June 2021 – May 2022 **"A computational modeling framework for COVID-19 vaccination"**, *NIH*, co-I, amount funded $ 12,2580.

Teaching Experiences

- Fall 2020 – Present , *@UTC, Chattanooga, TN*.
  - Math 4140/5140 - Mathematical Statistics — Spring 2022
  - Math 2100 - Introduction to Statistics
  - Math 4130 - Introduction to Probability and Statistics — Fall 2021
  - Math 5130 - Introduction to Probability and Statistics
  - Math 2100 - Introduction to Statistics
  - Math 2100 - Introduction to Statistics — Spring 2021
  - Math 4170/5170 - Nonparametric Statistics (Online)
  - Math 2100 - Introduction to Statistics (Hybrid) — Fall 2020
- Fall 2015– Spring 2020 , *@NMSU, Las Cruces, NM*.
  - Stat 251 - Statistics for Business and Behavior Sciences — Spring 2020
  - Math 192 - Calculus II — Fall 2019
  - Math 191 - Calculus I — Summer 2019
  - Math 190 - Pre-Calculus and Trigonometry — Spring 2019
  - Stat 251 - Statistics for Business and Behavior Sciences — Fall 2018
  - Stat 251 - Statistics for Business and Behavior Sciences — Spring 2018
  - Stat 251 - Statistics for Business and Behavior Sciences — Fall 2017
  - Math 191 - Calculus I — Spring 2017
  - Math 192 - Calculus II — Fall 2016
  - Stat 371 - Probability and Statistics for Engineers — Summer 2016
  - Math 120 - Intermediate Algebra — Spring 2016
  - Math 120 - Intermediate Algebra — Fall 2015

2014–2017 **Teaching Assistant**, *@NMSU, Las Cruces, NM*.

- Math 377 - Introduction to Numerical Analysis — Spring 2017
- Math 191 - Calculus I — Fall 2017
- Stat 371 - Probability and Statistics for Engineers — Spring 2017
- Math 191 - Calculus I — Spring 2017
- Math 190 - Pre - calculus — Spring 2016
- Math 142 - Calculus for Business — Fall 2015

- Math 142 - Calculus for Business — Spring 2015
- Math 190 - Pre - calculus — Fall 2014

Research Experiences

June 2017 – Aug. 2017 **Research Assistant**, *New Mexico State University*.

May 2018 – Aug. 2018 **Research Assistant**, *New Mexico State University*.

Honors and Scholarship

2019 **Dean's Graduate Award for Excellence of College of Arts and Sciences**, *The highest award given to a graduate student from the College of Arts and Sciences*, NMSU.

2018–2019 **Mathematical Science Scholarship**, *NMSU*.

2018–2019 **Outstanding Graduate Student**, *NMSU*.

2018 **JRC Student Travel Award**, *Joint Research Conference*, ASA.

2018 **JRC Student Scholarship**, *Joint Research Conference*, ASA.

2015–2018 **Graduate Assistant Tuition Fellowship**, *NMSU*.

2007 **Excellent Graduate Nominee**, *Northwest University*, Xi'an, China.

2007 **Excellent Graduate Monitor**, *Northwest University*, Xi'an, China.

2003 **Second Rank Major Scholarship**, *Northwest University*, Xi'an, China.

2002 **Third Rank Major Scholarship**, *Northwest University*, Xi'an, China.

Invited Talks

2020 **Mathematics Colloquium Series**, *Inference on shape and location parameters in multivariate skew-normal family*, Rollins College, Winter Park, Florida.

2020 **Mathematics Colloquium Series**, *Inference on shape and location parameters in multivariate skew-normal family*, University of Tennessee at Chattanooga, Chattanooga, Tennessee.

2019 **Joint NMSU/UTEP Workshop**, *Inference on the difference of location parameters under skew-normal settings*, UTEP, El Paso, TX.

2019 **Joint NMSU/UTEP Workshop**, *The decomposition of quadratic forms under matrix variate skew normal distribution*, NMSU, Las Cruces, NM.

2018 **Joint NMSU/UTEP Workshop**, *The plausibility regions for shape parameters under multivariate skew normal settings based on Inferential Model*, UTEP, El Paso, TX.

2018 **New Mexico Tech Seminar**, *The decomposition of quadratic forms under skew normal setting*, NMT, Socorro, NM.

2018 **Joint NMSU/UTEP Workshop**, *Estimation of location and shape parameters Under multivariate skew normal settings*, NMSU, Las Cruces, NM.

2017 **Joint NMSU/UTEP Workshop**, *Inferences on the location parameter under multivariate skew normal settings*, UTEP, El Paso, TX.

2017 **Joint NMSU/UTEP Workshop**, *Decomposition of Quadratic Forms under Skew Normal Setting*, NMSU, Las Cruces, NM.

2016 **Joint NMSU/UTEP Workshop**, *Estimation of location and shape parameters Under multivariate skew normal settings*, UTEP, El Paso, TX.

2016 **Joint NMSU/UTEP Workshop**, *Confidence intervals for the normal mean with known coefficient of variation based on Inferential Models*, NMSU, Las Cruces, NM.

2015 **Joint NMSU/UTEP Workshop**, *Shape mixture of the matrix variate skew normal distribution*, UTEP, El Paso, TX.

2014 **Joint NMSU/UTEP Workshop**, *KEGG-PATH: Kyoto encyclopedia of genes and genomes-based pathway analysis using a path analysis model* , UTEP, El Paso, TX.

Contributed Talks

2020 **Joint Mathematics Meetings**, *Inference on the difference of location parameters under Multivariate skew-normal setting*, Denver, CO.

2019 **Graduate Research & Arts Symposium (GRAS)**, *The plausibility regions for shape parameters under multivariate skew normal settings based on Inferential Model*, NMSU, Las Cruces, NM.

2018 **Joint Research Conference on statistics in Quality, Industry, and Technology**, *Inferences on the location parameter under multivariate skew normal settings*, Sante Fe, NM.

2018 **Joint Mathematics Meeting**, *Inferences on the location parameter under multivariate skew normal settings*, San Degio, CA.

Poster Presentation

2019 **Joint Statistical Meetings**, *The decomposition of quadratic forms under matrix variate skew normal Distribution*, Denver, CO.

Seminar Talks

2022 **Statistics Seminar on Zoom**, *Inferences on Location Parameters Based on Independent Multivariate Skew Normal Distributions*, NMSU.

2021 **Mathematics Colloquium Series**, *An application of Support Vector Machine (SVM) in Arrhythmia Heartbeats Classification*, UTC.

2021 **Mathematics Colloquium Series**, *A Stochastic Gompertz Diffusion Model for Untreated Human Glioblastomas*, UTC.

2020 **Statistics Seminar on Zoom**, *Estimation of Parameters and Decomposition of Quadratic Forms Under Skew-normal Settings*, NMSU.

2019 **Machine Learning Seminar**, *Prototype Methods and Nearest-Neighbors*, NMSU.

2018 **Statistics Seminar**, *Skew normality test*, NMSU.

2018 **Bio-math Seminar**, *Summer research presentation, Building an SDE model for breast cancer*, NMSU.

2017 **Bio-math Seminar**, *Stochastic Differential Equations – Stochastic growth pattern of untreated human glioblastomas predicts the optimal time for surgery*, NMSU.

2016 **Statistics Seminar**, *Skew symmetric distributions*, NMSU.

Community Service

2021 **Volunteer Judge for MAA Student Poster Session - Applied Mathematics Session**, *JMM 2021 (Virtual Meeting)*, January 8^{th}, 2021.

Professional Association

2016 – present **Member**, *American Mathematical Society (AMS)*.

2018 – present **Member**, *American Statistical Association (ASA), International Chinese Statistical Association (ICSA)*.

Reviewer for Journals and Conference

- Perceptual and Motor Skills
- Frontiers in Artificial Intelligence
- Applied Mathematics and Computation
- Journal of Biopharmaceutical Statistics
- ACM Mid-Southeast Conference 2021
- Symmetry (3)
- Mathematics (5)
- Entropy
- Stats (2)
- Journal of Statistical Computation and Simulation