Zhengwu Zhang (last update: 10/06/2023)

Contact Information

356 Hanes Hall
Statistics and Operations Research
Chapel Hill, NC 27516

Phone: 919-962-7998
E-mail: zhengwu_zhang@unc.edu
website: https://zhengwu.github.io/

Education

Florida State University, Tallahassee, FL USA

Ph.D. in Statistics, May 2015. Advisor: Prof. Anuj Srivastava
Thesis: Geometric Approaches for Analysis of Images, Densities and Trajectories on Manifolds

Sun Yat-Sen University, Guangzhou, China

M.S. in Pattern Recognition and Intelligent Systems, June 2010

South China University of Technology, Guangzhou, China

B.E. in Electronic Engineering (Talented Student Program), June 2008

Research Interests

Brain Connectomics, Imaging Genetics, Medical Imaging, Shape and Functional Data Analysis, Computational Neuroscience, Bayesian Statistics, Machine Learning

Professional Experience

University of North Carolina at Chapel Hill, Chapel Hill, NC

Assistant Professor (tenure-track) in 01/2021 - Present
- Department of Statistics and Operations Research (primary)
- Department of Psychology and Neuroscience (adjunct)
- Computational Medicine (member)
- Biomedical Research Imaging Center (BRIC) (member)

University of Rochester, Rochester, NY

Adjunct Assistant Professor 12/2021 - Present

Assistant Professor (tenure-track) in 10/2017 - 12/2020
- Department of Biostatistics and Computational Biology (primary)
- Department of Neuroscience (secondary)
- Goergen Institute for Data Science (affiliated)

Duke University, Durham, NC

Postdoctoral Fellow in the Department of Statistical Science 07/2016 - 09/2017

Statistical and Applied Mathematical Sciences Institute (SAMSI), NC

Postdoctoral Fellow 08/2015 - 07/2016
- Affiliated with the program of Challenges in Computational Neuroscience (CCNS)

Florida State University (FSU), Tallahassee, FL

Graduate Teaching/Research Assistant 08/2010 - 05/2015

Graduate Instructor 06/2014 - 08/2014
Fundamental Business Statistics (STA2023)

Chinese Academy of Science, Shenzhen, China
Research Intern 12/2009 - 07/2010

Honors and Awards

- UNC Chapel Hill Junior Faculty Development Award, 2022
- Oak Ridge Associated Universities Ralph E. Powe Junior Faculty Enhancement Award, 2022
- Discussion paper in *Journal of the American Statistical Association (Applications & Case Studies)*, 2022
- Supervised paper won the runner-up award in the paper competition sponsored by the ASA Statistical Methods in Imaging Section. Paper title "Optimized Diffusion Imaging for Brain Structural Connectome Analysis", 2022
- R.A. Bradley Award, for *best Ph.D dissertation* in the Department of Statistics, Florida State University, 2015
- Graduate Student Research and Creativity Award. *Only two awardees selected from STEM areas per year*, Florida State University, 2015
- CVPR 2015 Doctoral Consortium Travel Award, Boston, 2015
- Yongyuan and Anna Li Award, for *best graduate student presentation* in the Department of Statistics, Florida State University, 2015
- Brumback Award *for best student presentation* at Florida Chapter ASA Meeting, 2012
- Best First Year Student in Theoretical Statistics, Florida State University, 2011
- Talented Student Program, South China University of Technology (Top 5%), 2005

Publications

Ph.D. student and Post-doc coauthors are underlined

Papers Under Review

7. **Z. Zhang**, A. Venkataramana, M. Cole, D. Qiu, V. L. Feng, B. B. Risk, The impact of multiband and in-plane acceleration on white matter microstructure analysis. bioRxiv 2023.09.24.559215
6. A. Roy, Z. Lan, **Z. Zhang**. Diffusion MRI Prediction and Harmonization through Q-space Modeling. arXiv:2304.14188.
5. H. Yang, S. Winter, **Z. Zhang**, and D. Dunson. Interpretable AI for Relating Brain Structural and Functional Connectomes.
4. W. Dai, **Z. Zhang**, P. Song, H. Zhang, Y. Zhao. Heritability and Genetic Contribution Analysis of Structural-Functional Coupling in Human Brain.
3. W. Consagra, M. Cole, X. Qiu, **Z. Zhang**. Continuous and Atlas-free Analysis of Brain Structural Connectivity. arXiv:2308.05738.
1. Y. Zhang, M. Liu, **Z. Zhang**, D. Dunson. Motion-Invariant Variational Auto-Encoding of Brain Structural Connectomes. arXiv:2212.04535.
   This paper won the 2023 student paper competition in Statistical Methods in Imaging (SMI) Conference.

Peer-Reviewed Journals

2023

44. L. L. Duan, Z. Yuwen, G. Michailidis, **Z. Zhang**. Low Tree-Rank Bayesian Vector Autoregression Models. *Journal of Machine Learning Research*, just accepted.
43. D. Li, P. Nguyen, **Z. Zhang**, D. Dunson. Tree Representations of Brain Structural Connectivity via Persistent Homology. Frontiers in Neuroscience, Brain Imaging Methods, just accepted.
42. Y. Zhao, C. Chang, J. Zhang, **Z. Zhang** (2022). Genetic Underpinnings of Brain Structural Connectome for Young Adults. *Journal of the American Statistical Association*, just accepted
41. **Z. Zhang**, Y. Wu, D. Xiong, J. G. Ibrahim, A. Srivastava, H. Zhu (2022). LESA: Longitudinal Elastic Shape Analysis of Brain Subcortical Structures. *Journal of the American Statistical Association*, 118(541), 3-17
    This paper is accepted as a discussion paper* in JASA.
    *Very few papers in JASA are selected as discussion papers each year.

2022

40. Y. Li, G. Mateos, **Z. Zhang** (2022). Learning to Model the Relationship Between Brain Structural and Functional Connectomes. *IEEE Transactions on Signal and Information Processing over Network*, 8, 830-843.
39. P. Dey, **Z. Zhang**, D. Dunson (2022). Outlier Detection for Multi-Network Data. *Bioinformatics*, 38(16), 4011–4018

38. S. Acharyya, **Z. Zhang**, A. Bhattacharya, D. Pati (2022). Bayesian Hierarchical Modeling on Covariance Valued Data. *STAT*, e534.
37. R. J. Murden, **Z. Zhang**, Y. Guo, B. Risk. Interpretive JIVE: Connections with CCA and an Application to Brain Connectivity. *Frontiers in Neuroscience*, 16, 969510
36. **Z. Zhang**, B. Saparbayeva (2022). Amplitude Mean of Functional Data on $\mathbb{S}^2$ and its Accurate Computation. *Journal of Mathematical Imaging and Vision*, 64(9), 1010-1028
35. Q. Chen, A. Turnbull, M. Cole, **Z. Zhang**, F. V. Lin (2022). Enhancing Cortical Network-level Participation Coefficient as a Potential Mechanism for Transfer in Cognitive Training in aMCI. *NeuroImage*, 254, 119124
34. W. Consagra, A. Venkataramana, **Z. Zhang** (2022). Optimized Diffusion Imaging for Brain Structural Connectome Analysis. *IEEE Transactions on Medical Imaging*, 41(8), 2118-2129
This paper won the 2022 student paper competition (runner-up award) sponsored by the ASA Statistical Methods in Imaging Section of the American Statistical Association.

2021

33. **Z. Zhang**, J Gewandter, P. Geha (2021). Brain Imaging Biomarkers for Chronic Pain. *Frontiers in Neurology*, 12.
32. **Z. Zhang**, X. Wang, L. Kong, H. Zhu. (2021). High-Dimensional Spatial Quantile Function-on-Scalar Regression. *Journal of the American Statistical Association*, 117(539),1563-1578
31. M. Cole, K. Murray, E. St-Onge, B. Risk, J. Zhong, G. Schifitto, M. Descoteaux, **Z. Zhang**. (2021). Surface-Based Connectivity Integration: An Atlas-Free Approach to Jointly Study Functional and Structural Connectivity. *Human Brain Mapping*, 42, 3481– 3499
30. L. Wang, F. Lin, M. Cole, and **Z. Zhang**. (2021). Learning Clique Subgraphs in Structural Brain Network Classification with Application to Crystallized Cognition. *NeuroImage*, 225, 117493
29. L. Wang, **Z. Zhang**. (2021) Classification of Longitudinal Brain Networks with an Application to Understanding Superior Aging. *STAT*, 10(1), e402
28. M. Liu, **Z. Zhang**, D. Dunson. (2021) Auto-encoding Graph-valued Data with Applications to Brain Connectomes, *Neuroimage*, 245, 118750
27. G. Papadogeorgou, **Z. Zhang**, D. Dunson. (2021) Soft Tensor Regression. *Journal of Machine Learning Research*, 22, 1-53
26. F. Lin, K. Heffner, R. Gevirtz, **Z. Zhang**, D. Tadin, A. Porsteinsson. (2021) Targeting Autonomic Flexibility to Enhance Cognitive Training Outcomes in Older Adults with Mild Cognitive Impairment: Study Protocol for a Randomized Controlled Trial. *Trials*, 22(1), 1-15
25. Q. Chen, T. Baran, A. Turnbull, **Z. Zhang**, G. Rebok, F. Lin. (2021) Increased Segregation of Structural Brain Networks Underpins Enhanced Broad Cognitive Abilities of Cognitive Training. *Human Brain Mapping*, 42, 3202-3215
24. B. Risk, R. Murden, J. Wu, M. Nebel, A. Venkataraman, **Z. Zhang**, D. Qiu. (2021) Which Multiband Factor Should You Choose for Your Resting-State fMRI Study? *NeuroImage*, 234, 117965
23. Y. Zhuang, **Z. Zhang**, M. Tivarus, X. Qiu, J. Zhong, G. Schifitto. (2021). Whole-brain Computational Modeling Reveals Disruption of Microscale Brain Dynamics in HIV Infected Individuals. *Human Brain Mapping*, 42(1), 95-109

2020

22. X. Wang, G. Zhu, J. Rhen, J. Pang, **Z. Zhang**. (2020). Vessel Tech: A High-accuracy Pipeline for Comprehensive Mouse Retinal Vasculature Characterization. *Angiogenesis*, 24(1), 7-11
21. X. Ding, D. Yu, **Z. Zhang**, D. Kong. (2020). Multivariate Functional Responses Low-rank Regression with an Application to Brain Imaging Data. *The Canadian Journal of Statistics*, 49.1, 150-181
20. Q. Chen, H. Yang, B. Rooks, M. Anthony, **Z. Zhang**, D. Tadin, K. L. Heffner, and F. V. Lin. (2020). Autonomic Flexibility Reflects Learning and Associated Neuroplasticity in Old Age. *Human Brain Mapping*, 41(13), 3608-3619
19. Q. Chen, T. Baran, B. Rooks, M. K. O'Banion, M. Mapstone, **Z. Zhang**, F. Lin, and Alzheimer's Disease Neuroimaging Initiative. (2020). Cognitively Supernormal Older Adults Maintain a Unique Structural Connectome that is Resistant to Alzheimer's Pathology. *NeuroImage: Clinical*, 28, 102413.
18. B. Rooks, M. Anthony, Q. Chen, Y. Lin, T. Baran, **Z Zhang**, P. A. Lichtenberg, F. Lin. (2020). A Generic Brain Connectome Map Linked to Different Types of Everyday Decision-making in Old Age. *Brain Structure and Function*, 225(4), 1389-1400
17. F. Lin, Y. Tao, Q. Chen, M. Anthony, **Z. Zhang**, D. Tadin, K.L. Heffner. (2020) Processing Speed and Attention Training Modifies Autonomic Flexibility: A Mechanistic Intervention Study. *Neuroimage*, 213, 116730

2019

16. A. Anderson, P. Ren, T. M. Baran, **Z. Zhang**, F. Lin. (2019). Insula and Putamen Centered Functional

Connectivity Networks Reflect Healthy Agers' Subjective Experience of Cognitive Fatigue in Multiple Tasks. *Cortex*, 119, 428-440

15. T. Baran, **Z. Zhang**, A. Anderson, K. McDermott, F. Lin. (2019). Brain Structural Connectomes Indicate Shared Neural Circuitry Involved in Subjective Experience of Cognitive and Physical Fatigue in Oder Adults. *Brain Imaging and Behavior*, 14(6), 2488-2499
14. M. Dai, **Z. Zhang**, A. Srivastava. (2019). Analyzing Dynamical Brain Functional Connectivity As Trajectories on Space of Covariance Matrices. *IEEE Transactions on Medical Imaging*, 39(3), 611-620
13. M. Dai, **Z. Zhang**, A. Srivastava. (2019). Discovering Common Change-Point Patterns in Functional Connectivity Across Population. *Medical Imaging Analysis*, 58, 101532
12. **Z. Zhang**, G. Allen, H. Zhu, D. Dunson. (2019). Tensor Network Factorizations: Relationships Between Brain Structural Connectomes and Traits. *NeuroImage*, 197, 330-343
11. L. Wang, **Z. Zhang**, D. Dunson. (2019). Symmetric Bilinear Regression for Signal Subgraph Estimation. *IEEE Transactions on Signal Processing*, 67(7), 1929-1940
10. L. Wang, **Z. Zhang**, D. Dunson. (2019). Common and Individual Structure of Brain Networks. *Annals of Applied Statistics*, 13.1, 85-112
9. **Z. Zhang**, E. Klassen, A. Srivastava. (2019). Robust Comparison of Kernel Densities on Spherical Domains. *Sankhya A*, 81(1),144-171
8. **Z. Zhang**, M. Descoteaux, David Dunson. (2019). Nonparametric Bayes Models of Fiber Curves Connecting Brain Regions. *Journal of the American Statistical Association*, 114(528), 1505-1517

2018

7. P. Ren, B. Chapman, **Z. Zhang**, G. Schifitto, F. Lin. (2018). Functional and Structural Connectivity of the Amygdala Underpins Locus of Control in Mild Cognitive Impairment. *NeuroImage: Clinical*, 20, 297-304
6. **Z. Zhang**, J. Su, H. Le, E. Klassen, A. Srivastava. (2018). Rate-Invariant Analysis of Covariance Trajectories. *Journal of Mathematical Imaging and Vision*, 60, 1306-1323
5. **Z. Zhang**, M. Descoteaux, J. Zhang, D. Dunson, A. Srivastava, H. Zhu. (2018). Mapping Population-based Structural Connectome. *NeuroImage*, 172, 130-145
4. **Z. Zhang**, E. Klassen, A. Srivastava. (2018). Phase-Amplitude Separation and Modeling of Spherical Trajectories. *Journal of Computational and Graphical Statistics*, 27(1), 85-97

2017 and earlier

3. X. Dong, **Z. Zhang**, A. Srivastava. (2017). Bayesian Tractography Using Geometric Shape Priors. *Frontiers in Neuroscience*, 11, 483
2. **Z. Zhang**, D. Pati, A. Srivastava. (2015). Bayesian Clustering of Shapes of Curves. *Journal of Statistical Planning and Inference*, 166, 171-186
1. **Z. Zhang**, E. Klassen, A. Srivastava. (2013). Gaussian Blurring-Invariant Comparison of Signals and Images. *IEEE Transactions on Image Processing*, 22(8), 3145-3157

Peer-Reviewed Conference Proceedings with Low Acceptance Rates

7. W. Consagra, M. Cole, **Z. Zhang**. Analyzing Brain Structural Connectivity as Continuous Random Functions. *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2022
6. L. Yang, R. Shafipour, G. Mateos, **Z. Zhang**. Mapping brain structural connectivities to functional networks via graph encoder-decoder with interpretable latent embeddings. *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, 2019
5. H. Ren, X. Wang, S. Wang, **Z. Zhang**. Predict Fluid Intelligence of Adolescent Using Ensemble Learning. *MICCAI Workshop*, 2019
4. M. Dai, **Z. Zhang**, A.Srivastava. Discovering Change-Point Patterns in Dynamic Functional Brain Connectivity of a Population. *Information Processing in Medical Imaging (IPMI)*, 2017
3. M. Dai, **Z. Zhang**, A. Srivastava. Testing Stationarity of Brain Functional Connectivity Using Change-Point Detection in fMRI Data. (Oral Presentation, one of four selected papers), *The IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR), DiffCVML*, 2016
2. **Z. Zhang**, E. Klassen, A. Srivastava, P.K. Turaga, R. Chellappa. Blurring-Invariant Riemannian Metrics for Comparing Signals and Images, *International Conference on Computer Vision (ICCV)*, Barcelona, Spain, 2011
1. C. Xu, **Z. Zhang**, J. Liu, X. Tang. 3D Object Search Through Semantic Component. *ACM Multimedia*, 2010

Peer-Reviewed Abstracts (Selected)

2 A. Venkataraman, B. Risk, D. Qiu, J. Zhong and **Z. Zhang**. Multi-band in Diffusion MRI: Can we go too fast? *International Society for Magnetic Resonance in Medicine (ISMRM)*, 2021

1 A. Venkataraman, B. Risk, D. Qiu, J. Zhong F. Lin, and **Z. Zhang**. Quantitative Evaluation of Multi-band Diffusion MRI Data. *ISMRM*, 2021

Book Chapters

4. S. Joshi, J. Su, **Z. Zhang**, B. Amor. Elastic Shape Analysis of Functions, Curves and Trajectories. *Riemannian Computing in Computer Vision*, Springer, Cham, 2016. 211-231
3. A. Duncan, **Z. Zhang**, A. Srivastava. An Elastic Riemannian Framework for Shape Analysis of Curves and Tree-Like Structures. *Algorithmic Advances in Riemannian Geometry and Applications*, Springer, Cham, 2016. 187-205
2. **Z. Zhang**, A. Srivastava, Q. Xie. Elastic Registration and Shape Analysis of Functional Objects. *Geometry Driven Statistics* , Chapter 11, 2015
1. **Z. Zhang**, D. Pati, A. Srivastava. Bayesian Shape Clustering. *Nonparametric Bayesian Inference in Biostatistics*, pp 57-75, 2015

Teaching

University of North Carolina at Chapel Hill

- Lecturer for STOR 565 - *Machine Learning*
  - Enrollment: 67 — 01/2023 - 05/2023
  - Enrollment: 64 — 01/2022 - 05/2022
- Lecturer for STOR 320/520 - *Introduction to Data Science*
  - STOR 320 enrollment: 59 — 08/2022 - 12/2022
  - STOR 520 enrollment: 19 — 08/2022 - 12/2022
  - STOR 520 enrollment: 18 — 08/2021 - 12/2021
  - STOR 320 enrollment: 60 — 08/2021 - 12/2021
- Lecturer for STOR 893 - *Statistical Computation*
  - Enrollment: 18 — 01/2021 - 05/2021

University of Rochester

- Lecturer for BST 430 - *Introduction to Statistical Computing*
  - Enrollment: 10 — 08/2018 - 12/2018
  - Enrollment: 6 — 08/2019 - 12/2019
  - Enrollment: 9 — 08/2020 - 12/2020

Florida State University

- Lecturer for STA 2023 - *Fundamental Business Statistics* — 08/2014 - 12/2014

Advising

Current Students and Postdocs

4. Andrew Ackerman. Ph.D. in Statistics (joint with Profs. J. S. Marron and Jan Hannig UNC Chapel Hill)
   Thesis title: Multi-faceted Brain Imaging Data Integration via Analysis of Subspaces
3. Adrian Allen. Ph.D. in Statistics (joint with Prof. Andrew Nobel at UNC Chapel Hill)
   Thesis title: TBD
2. Yuwei Wang. Undergraduate student at UNC Chapel Hill
   Honors thesis title: Financial Time Series Data Forecasting Using News and Social Media Messages with the Help of Large Language Models
1. Tianrui Ye. Undergraduate student at UNC Chapel Hill.
   Honors thesis title: TBD

Former Students and Postdocs

8. Martin Cole (2023), Ph.D. in Statistics (joint with Prof. Xing Qiu at University of Rochester)
   Thesis title: Scratching the Surface: Surface-based cortical registration and analysis of connectivity functions.
7. Kyungjin Sohn (2023), master's student in Statistics (UNC Chapel Hill).
   Thesis title: "Brain Network Analysis"

6. Jimin Choi (2022), master's student in Statistics (UNC Chapel Hill).
   Thesis title: "Human Trait Prediction Using Brain Connectome Data"
5. Dr. Bayan Saparbayeva (2019-2021), postdoc (joint with Prof. Giovanni Schifitto)
4. Dr. Brian Rook (2018-2020), postdoc (joint with Prof. Feng Vankee Lin)
3. Xuelin Wang (2020), master's student in Biostatistics (University of Rochester)
2. Huijing Ren (2020), master's student in Biostatistics (University of Rochester)
1. Sheng Wang (2019), master's student in Biostatistics (University of Rochester)

Member, Ph.D. Examination Committee

11. Taylor Petty, Statistics, 2023 (UNC Chapel Hill)
10. Siqi Xiang, Statistics, 2023 (UNC Chapel Hill)
9. Martin Cole, Statistics, 2023 (University of Rochester)
8. Qiuyi Wu, Statistics, 2023 (University of Rochester)
7. Hui Shen, Statistics, 2023 (UNC Chapel Hill)
6. Dhruv Patel, Statistics, 2023 (UNC Chapel Hill)
5. Yang Li, Electronics and Communication Engineering, 2022 (University of Rochester)
4. William Consagra, Statistics, 2022 (University of Rochester)
3. Haodong Wang, Statistics, 2022 (UNC Chapel Hill)
2. Arun Venkataraman, Physics, 2021 (University of Rochester)
1. Jiatong Sui, Statistics, 2021 (University of Rochester)

Grants

Ongoing

8. NIH/NIDCR R34, 2023-2024. "PUFA metabolism for prevention and treatment of TMD pain: an interdisciplinary, translational approach". Role: Co-I. Total amount: $314,704.
7. Junior Faculty Development Award UNC Chapel Hill, 2022 - 2023. Role: PI.
6. ORAU Junior Faculty Enhancement Award, 2022-2023: "Improving Representations and Statistical Analysis of Brain Connectomics". Role: PI.
5. NIH/NIA R21/R33, 2021-2026: "Develop an ANS-based Personalized Cognitive Training for Mild Cognitive Impairment". Role: MPI (with MPIs Drs. Feng Lin from Stanford and Cristiano Tapparello from the University of Rochester). Total amount (include indirect cost): $2,280,148.
4. NIH R25, 2023-2028: "Promoting Collaborative Research on Human Connectome Analysis for Substance Use Disorders". Role: MPI (with MPIs Guorong Wu and Minjeong Kim). Total amount (including indirect cost): $432,185.
3. NIH R01, 2023-2028: "Brain Mechanisms of Chronic Low-Back Pain: Specificity and Effects of Aging and Sex". Role: Co-I (PI is Dr. Paul Geha). Total amount (including indirect cost): $2,910,734.
2. NIH R01, 2022 - 2027: "Quantitative Language and Facial Expression Phenotyping of Chronic Pain". Role: Co-I (PI is Dr. Paul Geha from the University of Rochester). Total amount (including indirect cost): $3,590,922.
1. NIH R01, 2022 - 2027: "Brain Structural Biomarkers of Risk and Resilience to Pain Chronification". Role: Co-I (PI is Dr. Paul Geha from the University of Rochester). Total amount (including indirect cost): $3,122,147.

Complete

7. NIH/NIA R21, 2020-2023: "Advancing Methods for Structural Connectome Acquisition and Estimation in Older Adults". Role: Contact PI (with MPI Dr. Benjamin Risk from the Emory University). Total amount (including indirect cost): $438,449.
6. NIH/NIMH R01 2018-2023: "Brain Structural and Functional Connections in HIV-Associated Neuroinflammation". Role: Co-I (PI is Dr. Giovanni Schifitto from the University of Rochester). Total amount (including indirect cost): $3,223,096.
5. NIH/NIMH R01, 2018-2022. "CRCNS: Geometry-based Brain Connectome Analysis". Role: MPI (with MPI Dr. David Dunson). Total amount: $977,308.
4. Health Sciences Center for Computational Innovation Pilot Award, 2019-2020. "Understanding Effects of Substance Use on Brain Structural Connectome and Cognition Development during Adolescence". Role: PI. Total amount: $25,000.
3. Roberta K. Courtman Revocable Trust & Rochester Center for Alzheimer's Disease, 2018-2019: "Supernormal Structural Connectomes: Lessons for Alzheimer's Disease". Role: MPI (with MPI Dr. Timothy Baran). Total amount: $50,000.
2. The NDA Computational Credits Pilot Program, 2018-2019. Role: PI. Total amount: $5,000.

1. UR-CTSI Pilot Grant, 2017-2018. "Personalized Medical Image Analysis Based on Partial Differential Equations". Role: Co-PI (with PI Dr. Xing Qiu). Total amount: $35,000.

Professional Services

Committee Services & Officers in Professional Organizations

- STOR and SDSS Joint Position Hiring Committee (UNC Chapel Hill), 2023.
- STOR Department's Colloquium Committee (UNC Chapel Hill), 2022 to present.
- MS Admissions Committee (UNC Chapel Hill), 2022 to present.
- Publication officer for the ASA Statistics in Imaging Section, 2022 to present.
- Neuroscience Executive Advisory Committee (UNC Chapel Hill), 2022 to present.
- Data Science Master Student Selection Committee (University of Rochester), 2018 and 2019
- ASA Statistics in Imaging Section student paper award committee, 2017, 2018, 2019 and 2022.
- SMI paper competition committee, 2020 and 2022

Proposal Reviewer

- Reviewer for NSF-DMS
- Reviewer for Chilean National Commission for Scientific and Technological Research
- Reviewer for Clinical and Translational Science Awards (CTSA) pilot grant

Journal Reviewer

- *Annals of Applied Statistics; Bioinformatics; Biosystems Engineering; Computers & Graphics; Computer Vision and Image Understanding; Electronic Journal of Statistics; Human Brain Mapping; Journal of Computational and Graphical Statistics; Journal of Mathematical Imaging and Vision; Journal of Statistical Computation and Simulation; Journal of the American Statistical Association; Journal of the Royal Statistical Society: Series B; Nature Neuroscience; SIAM Journal on Mathematics of Data Science; Statistica Sinica; etc.*

Conference Reviewer

- WACV, ICPR, Cosyne, CVPR and so on.

Workshop & Session Organizer

- Organizer of Invited Session "Recent Advancements in Statistical Methods for Brain Connectome Analysis", Statistical Methods in Imaging (SMI) 2023
- Organizer of Invited Session "Non-parametric methods for biomedical data", ICSA-Canada Symposium 2022.
- Organizer of Invited Session "Statistical methods for complex objects", Statistical Methods in Imaging (SMI) 2022.
- Organizer of Invited Session "New Advances in Nonparametric Statistics for Big Data", ICSA-Canada Symposium 2019
- Organizer of Imaging Analysis Workshop at University of Rochester, Sept. 2018
- Session Chair at BIRS Workshop - *Mathematical and Statistical Challenges in Neuroimaging Data Analysis*
- Session Chair at SAMSI Workshop - *CCNS Transition Workshop*
- Organizer of Invited Session "Geometric Approaches in Functional Data Analysis", ICSA 2016

Presentations

(Selected) Invited Presentations / Lectures

53. (06/2023), Longitudinal Shape Analysis of Brain Subcortical Structures, ICSA 2023 Applied Statistics Symposium, Ann Arbor, MI
52. (05/2023), *Alignment of Continuous Brain Connectivity*, Statistical Methods in Imaging Conference 2023, Minnesota, MN
51. (05/2023), *Statistical Analysis of Brain Connectomes*, National Institute of Environmental Health Sciences (NIEHS), NC
50. (03/2023), *Optimizing Brain Connectome Acquisition*, UNC-Chapel Hill, Biomedical Research Imaging Center, NC
49. (03/2023), *Statistical Analysis of Brain Connectomes*, UNC Greensboro, Department of Mathematics and Statistics, NC
48. (03/2023), *Statistical Analysis of Brain Connectomes*, NCSU, Department of Statistics, NC
47. (03/2023), *Continuous and Atlas-free Analysis of Brain Structural Connectivity*, ENAR 2023, TN

46. (11/2022), *Analyzing Structural Brain Connectivity as Continuous Functions*, MDSAPT 2022, Yale
45. (10/2022), *Tensor decomposition and its application in brain network analysis*, Conferences on advances in Data Science, Texas A&M University, TX
44. (05/2022), *Surface-based Analysis of Brain Structural Connectome*, SIM 2022, Nashville, TN
43. (04/2022), *Longitudinal Shape Analysis of Brain Subcortical Structures*, SIAM Conference on Uncertainty Quantification, online
42. (04/2022), *Structural Connectivity Acquisition, Estimation and Analysis*, ASU, School of Mathematical and Statistical Sciences, online
41. (03/2022), *Optimized Diffusion Imaging for Brain Structural Connectome Analysis* ENAR, online
40. (01/2022), *Structural Connectivity Acquisition, Estimation and Analysis* SNAC UNC Chapel Hill, online
39. (12/2021) *Surface-based Connectivity Integration*, Neuroimaging and Brain Aging Workshop, online
38. (10/2021) *Motion-Invariant Auto-Encoding of Brain Structural Connectomics*, Asilomar Conference on Signals, Systems, and Computers, online
37. (09/2021) *Registration of Functional Data on S2*, ICSA 2021 Applied Statistics Symposium, online.
36. (06/2021) *Surface-based Connectivity Integration*, Workshop on Geometric and Topological Methods in Biomedical Image Analysis, online
35. (05/2021) *Surface-based Connectivity Integration*, The Statistical Methods in Imaging Conference 2021, online
34. (01/2021) *Recent Progress on Brain Imaging Data Analysis*, Program of Computational Medicine, UNC Chapel Hill, NC
33. (12/2019) *Statistical Analysis of Brain Structural Connectomes*, Center for Biomedical Imaging Statistics (CBIS), Emory University, GA
32. (12/2019) *Statistical Analysis of Brain Structural Connectomes*, Department of Statistics, University of Georgia, GA
31. (11/2019) *Statistical Analysis of Brain Structural Connectomes*, Department of Biostatistics, University at Buffalo, NY
30. (09/2019) *Statistical Analysis of Brain Structural Connectomes*, Department of Statistics and Data Science, UT-Austin, TX
29. (06/2019) *Spatial Quantile Function-on-Scalar Regression*, Statistical Society of Canada 2019 Annual Meeting, Calgary, Alberta, Canada
28. (04/2019) *Geometry-Based Brain Structural Connectome Analysis*, Department of Brain and Cognitive Sciences, University of Rochester, Rochester, NY
27. (04/2019) *Rate-Invariant Analysis of Covariance Trajectories*, Special Invited Session in the IEEE International Symposium on Biomedical Imaging (ISBI) 2019, Venice, Italy.
26. (12/2018) *Geometry-based Brain Structural Connectome Analysis*, International Conference on Big Data and Information Analytics, Houston, TX
25. (07/2018) *Brain Structural Connectome and Traits*, ICSA China Conference with the Focus on Data Science, Qing Dao, China
24. (06/2018) *Bayesian Modeling of Fiber Tracts Connecting Brain Regions*, The 2nd International Conference on Econometrics and Statistics (EcoSta 2018), Hong Kong, China
23. (06/2018) *Brain Structural Connectome and Traits*, The 2018 ICSA Applied Statistics Symposium, New Brunswick, NJ
22. (06/2018) *Bayesian Modeling of Fiber Tracts Connecting Brain Regions*, Conference on Statistical Learning and Data Science, Columbia University, NY
21. (05/2018) *Optimization Problems in Brain Connectome Analysis*, Workshop in Statistical Theory and Methods Based on Distributed Computing, BIRS-CMO, Oaxaca, Mexican
20. (02/2018) *Relationships Between Brain Structural Connectome and Traits*, Featured Speaker for CIRC Symposium, University of Rochester, Rochester, NY
19. (10/2017) *Population-based Structural Connectome Analysis*, Workshop on Applications-Driven Geometric Functional Data Analysis, FSU, Tallahassee, FL
18. (08/2017) *Population-based Structural Connectome Analysis*, JSM 2017, Chicago, IL
17. (06/2017) *Population-based Structural Connectome Analysis*, SAND 8, CMU, Pittsburgh, PA
16. (08/2016) *Brain Structural Connectivity Analysis*, JSM 2016, Chicago, IL
15. (05/2016) *Robust Human Brain Structural Connectivity Analysis*, SAMSI 2016, Durham, NC
14. (03/2016) *Robust Brain Structural Connectivity Analysis*, ENAR 2016, Austin, TX
13. (03/2016) *Robust Brain Structural Connectivity Analysis*, NISS/SAMSI Affiliates Annual Meeting, Austin, TX
12. (02/2016) *Robust Brain Structural Connectivity Analysis Using HCP Data*, Mathematical and Statistical Challenges in Neuroimaging Data Analysis, Banff, Canada

11. (01/2016) *Metric-Based Registration and Analysis of Functional Data*, Arizona State University, Tempe, AZ
10. (10/2015) *Structural Brain Connectivity Analysis on HCP*, SAMSI, Durham, NC
9. (09/2015) *Metric-Based Shape and Functional Data Analysis*, UNC Chapel Hill, NC
8. (08/2015) *Metric-Based Functional Data Analysis*, Duke University, Durham, NC
7. (06/2015) *Bayesian Clustering of Shapes of Curves*, BNP 10, Raleigh, NC
6. (06/2015) *Video-Based Action Recognition Using Rate-Invariant Analysis of Covariance Trajectories*, CVPR (Poster), Boston
5. (06/2014) *A Novel Nonparametric Two-Sample Hypothesis Test Using Geometric Formulations*, Summer Research Conference, Galveston, TX
4. (02/2014) *Bandwidth-Invariant Comparison of Nonparametric Densities*, Florida ASA Chapter meeting, University of Florida, Gainesville, FL
3. (08/2013) *Flight Itinerary Extraction Framework*, Easilydo Inc. Mountain View, CA
2. (02/2013) *Blurring-Invariant Comparison of Signals and Images*, Florida ASA Chapter meeting, Pensacola, FL
1. (02/2012). *Blurring-Invariant Riemannian Metrics For Comparing Signals and Images.* Florida ASA Chapter meeting, Jacksonville, FL

Computer Skills Python, MATLAB, R, C/C++, SAS, SQL, MySQL, VTK library, OpenCV library

Professional Memberships

Memberships

- The American Statistical Association
- International Chinese Statistical Association
- International Biometric Society
- Medical Image Computing and Computer Assisted Intervention Society

Others

- President of Badminton Club at FSU, May 2013 - May 2014