Jing Zhang

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EDUCATION

Case Western Reserve University, Cleveland, OH, USA

- PhD candidate in *Biostatistics* August 2019-August 2024 (Expected)

Fudan University, Shanghai, China

- Master of Science in *Biostatistics* June 2019
- Bachelor of Medicine in *Clinical Medicine* June 2016

Duke University, Durham, NC, USA June 2016-August 2016

- Summer Session Student

PROFESSIONAL EXPERIENCE

Case Western Reserve University, *Research Assistant,* Cleveland, OH, USA August 2020-Current

- Statistical analysis: Sensitivity analysis of using skin biomarker for diagnosis of prion diseases; Median quantile regression of Tau seeding in neurodegenerative diseases; Multi-voxel pattern analysis (MVPA) for cognitive reserve assessment using fMRI data; Linear Mixed Model and rater reliability for cross-sectional study of human vagus nerve
- Grant proposal: NIH contract ($15.75 million) for mapping the human vagus nerve; NIH STTR grant for intra-operative fMRI during brain tumor surgery; Phase I clinical trial of pancreatic cancer; Longitudinal imaging study of bipolar disorder; Cross-sectional study of COVID-19 and substance use behavior in pregnant women

Merck & Co., Inc., *Biostatistics Intern*, Upper Gwynedd, PA, USA May 2022- August 2022

- Research how much of the event-free survival benefit seen in Merck KN-522 trial for Keytruda can be attributed to neoadjuvant only Keytruda and continued adjuvant Keytruda, respectively
- Use Propensity Score method and external trial data to construct Arm 3 with neoadjuvant only Keytruda treatment
- Hands on analysis with Merck trial data, study Merck trial protocol
- Deliverable: parameterized R markdown file for future data analysis

Fudan University, *Research Assistant*, Shanghai, China September 2016-June 2019

- Statistical analysis: Longitudinal analysis of myopia surgery using linear mixed model; Cross-sectional study of infectious diseases; Phase III clinical trial of gastric cancer using survival analysis

Center for Disease Control and Prevention, *Research intern*, Shanghai, China September 2017-December 2017

- Data management for tuberculosis surveillance data in Shanghai from 1992-2016
- Analyzed the spatial and temporal features for the prevalence of tuberculosis among different population
- Found spatial clusters for poor tuberculosis treatment outcome and analyzed the risk factors for it

Huashan Hospital, *Clinical Intern*, Shanghai, China June 2015-June 2016

- Rotated among 24 different departments in 48 weeks in Huashan Hospital, one of the top 3 hospitals in China

ACADEMIC PROJECTS

Brain tumor patient functional connectivity and its test-retest reliability during awake and anesthesia 2023-Current

- Comparing the functional connectivity and its test-retest reliability between awake and anesthesia
- Using developed variance estimation method for dynamic functional connectivity

Variance estimation for dynamic functional connectivity 2022-23

- A variance estimator for sliding window correlation, considering varying window autocorrelation and cross-correlation
- Window size recommendation for varying window; Dynamic connectivity detection based on confidence interval

Early stopping rule for real-time fMRI dynamic experimentation through forecasting 2020-21

- Forecasted fMRI signal by bootstrap aggregation (bagging) ARIMA model using STL Decomposition and Box-Cox Transformation
- Supported the early stopping rule of real-time fMRI dynamic experimentation

Simulation-based comparisons between generalized spatially varying coefficient models 2018-19

- Generated varying-coefficient simulation data based on logistic distribution, according to disease occurrence
- Compared the performance of generalized geographically weighted regression under different distributions
- Applied the result to tuberculosis in Shanghai, and Hand, Foot, and Mouth disease in 7 provinces in China

Effects of spatial autocorrelation and hospitals on tuberculosis treatment outcome: An implication of tuberculosis control in a highly integrated city 2017-18

- Explored risk factors for poor tuberculosis treatment outcome in Shanghai, in both individual level and spatial aspect
- Found the effects of spatial autocorrelation and designated hospital on treatment outcome and the biased estimation of other risk factors if spatial information was ignored
- Visualized the preference of patients in treatment hospitals and gave constructive suggestions to the government

A Simulation on the Effectiveness of the Robustness Index of Propensity Score Estimation 2018

- Collaborated with Dr. Wei Pan, an associate professor at Duke University on the simulation-based study to prove the effectiveness of the robustness index in the presence of uncontrolled confounders
- Implemented the robustness index, probability values and percentage points for Pearson distributions in R
- Improved the method by augmenting the sampling space and bootstrap

CONFERENCE PRESENTATION AND POSTERS

1. **Zhang, J.**, Posse, S., Chen, C., Tatsuoka, C. Variance Estimation for Dynamic Functional Connectivity. *Oral presentation* at Eastern North American Region (ENAR), Baltimore, MD, U.S., Mar. 2024.
2. **Zhang, J**., Vizioli, L., Tatsuoka, C., Yacoub, E., Chen, C., Posse, S. Non-Stationarity of Resting-State Connectivity in Patients with Brain Tumors in the Awake and Anesthetized State. *Poster* at International Society for Magnetic Resonance in Medicine (ISMRM), Singapore, May 2024
3. **Zhang, J.**, Posse, S., Chen, C., Tatsuoka, C. Modelling connectivity with non-stationary resting-state fMRI data in patients with brain tumors. *Poster* at Hillman Cancer Center Scientific Retreat, Pittsburg, PA, U.S., Sept 2023
4. Carr, S., Chen, W., **Zhang, J.,** Fondran, J., Taylor, HG., Posse, S., Lu, X., Tatsuoka, C. Early Stopping with Real-time fMRI. *Poster* at 7th Annual BRAIN Initiative Meeting, Virtual, June 2021

TEACHING EXPERIENCE

Case Western Reserve University, *Teaching Assistant,* Cleveland, OH, USA 2020

- Teaching Assistant for *Statistical Methods II*: grading and Q&A of R projects

Fudan University, *Teaching Assistant*, Shanghai, China September 2016-June 2019

- Teaching Assistant for *Statistics: Principles, Methods and R*: instructed by Prof. Hua Liang from George Washington University, responsible for grading and Q&A of R projects
- Teaching Assistant responsible for grading and Q&A of R projects, instructed 500+ students using Stata for statistical analysis

SKILLS and HONORS

- Programming and Software: R, Python, MATLAB, SAS, Stata, LaTeX, REDCap
- Relevant Courses: Survival Analysis, Longitudinal Analysis, Machine Learning and Data Mining, Bayesian Statistics, Statistical Consulting, Mathematical Statistics, Design and Measurement, Epidemiology, Population Health
- Education Stipend & Travel Award in 2024 ISMRM & ISMRT Annual Meeting 2024
- Outstanding Student (Top 5%) in Fudan University (twice) 2012, 2015

PUBLICATIONS

1. **Zhang, J.**, Posse, S., Tatsuoka, C. A varying window size method for variance estimation of sliding window correlation: dynamic functional connectivity inference. (in progress)
2. **Zhang, J.**, Tatsuoka, C., Chen, C., Vizioli, L., Yacoub, E., Posse, S. Non-Stationarity of Resting-State Connectivity in Patients with Brain Tumors in the Awake and Anesthetized State (in progress)
3. **Zhang, J.**, Shen, X., Yang, C. et al. (2022). *Spatial analysis of tuberculosis treatment outcome in Shanghai: implications for tuberculosis control*. Epidemiology and Health, e2022045.
4. Carr, S. J., Chen, W., Fondran, J., Friel, H., Gonzalez, J. S., **Zhang, J.,** & Tatsuoka, C. (2021). *Early Stopping in Experimentation with Real-time Functional Magnetic Resonance Imaging Using a Modified Sequential Probability Ratio Test*. Frontiers in Neuroscience, 15, 643740.
5. Zhang, W., Orrú, C.D., Foutz, A. Ding, M. Yuan, J. Shah, S. **Zhang, J**., ... & Zou, W. Large-scale validation of skin prion seeding activity as a biomarker for diagnosis of prion diseases. Acta Neuropathol 147, 17 (2024). https://doi.org/10.1007/s00401-023-02661-2
6. Zhu, Y., Wang, G., Kolluru, C., Gu, Y., Gao, H., **Zhang, J**., ... & Yu, X. Transport pathways and kinetics of cerebrospinal fluid tracers in mouse brain observed by dynamic contrast-enhanced MRI. Sci Rep 13, 13882 (2023). https://doi.org/10.1038/s41598-023-40896-x
7. Manca, M., Standke, H.G., Browne, D.F., Huntley, ML., Thomas, OR., Orrú, CD., Hughson, AG., Kim, Y., **Zhang, J**. ... & Kraus, A. Tau seeds occur before earliest Alzheimers changes and are prevalent across neurodegenerative diseases. Acta Neuropathol 146, 31 – 50 (2023). https://doi.org/10.1007/s00401-023-02574-0
8. Upadhye, A. R., Kolluru, C., Druschel, L., Al Lababidi, L., Ahmad, S. S., Menendez, D. M., Buyukcelik, O. N., Settell, M. L., Jenkins, M.W., Wilson, D. L., **Zhang, J.**, ... & Shoffstall, A. J. (2022). *Fascicles Split or Merge Every~ 560 Microns Within the Human Cervical Vagus Nerve*. J. Neural Eng.
9. Lorincz-Comi, N., Ajayakumar, J., Curtis, J., **Zhang, J.**, Curtis, A., & Lovell, R. (2021). *Addressing uncertainty in census estimates*. Spatial Statistics, 100523.
10. Wei, R., Li, M., Yang, W., Shen, Y., Zhao, Y., Fu, D., Shang, J., **Zhang, J.**, ... & Zhou, X.. (2020). *Corneal Densitometry After Small Incision Lenticule Extraction (SMILE) and Femtosecond Laser-Assisted LASIK (FS-LASIK): 5-Year Prospective Comparative Study*. Frontiers in medicine, 7, 745.
11. Hu, Y., Xu, L., Pan, H., Shi, X., Chen, Y., Lynn, H., Mao, H., Zhang, H., Cao, H., Zhang, J., **Zhang, J.**, ... & Zhao, G. (2020). *Transmission center and driving factors of hand, foot, and mouth disease in China: A combined analysis.* PLoS neglected tropical diseases, 14(3), e0008070.
12. Lu, Z., Jiang, W., **Zhang, J.**, Lynn, H. S., ... & Zhang, Z. (2019). *Drug resistance and epidemiology characteristics of multidrug-resistant tuberculosis patients in 17 provinces of China*. Plos one, 14(11), e0225361.