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Personal statement

I am a computer scientist with a diverse research background spanning multiple fields, including network science, artificial intelligence, computational psychiatry, and sociology. My expertise lies in both computer science and clinical medicine, specializing in developing graph algorithms and addressing challenges in medical artificial intelligence. With a track record of over 100 high-quality publications and securing more than \$20 million in research grants, I have gained valuable experience in the field. Currently, I hold positions at Nanjing Medical University and Nanjing Brain Hospital, where I concentrate on medical artificial intelligence, specifically focusing on the application of networks theory in neuroscience. Recognized for my achievements in medical artificial intelligence, I have been honored as a distinguished member of the Chinese Computer Society and a distinguished medical expert in Jiangsu Province of China. For more information about my research and publications, please visit my academic profiles:

Google Scholar: <https://scholar.google.com/citations?user=qElz2soAAAAJ>

ResearchGate: <https://www.researchgate.net/profile/Xizhe-Zhang-5/research>

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Professional Experience

- *Professor* (2/2020 - present), School of Biomedical Engineering and Informatics, Nanjing Medical University, China
- *Professor* (2/2020 - present), Department of Psychiatry, Affiliated Nanjing Brain Hospital, Nanjing Medical University, China
- *Visiting scientist* (9/2016 – 10/2017), Department of Computer Science, Washington University in St. Louis, St. Louis, MO, USA
- *Associate professor* (9/2006 – 1/2020), School of Computer Science and Engineering, Northeastern University, Shenyang, China

Education

- *Ph.D.* in Computer Science, Jilin University, China (9/2003 – 6/2006)
- *M.S.* in Computer Science, Jilin University, China (9/2000 – 7/2003)
- *B.S.* in Electronic Engineering, Jilin University, China (9/1996 – 7/2000)

Professional Memberships

- Distinguished Member, China Computer Federation, 2023-present;

Editorial Duties

- BMC Psychiatry, Editorial Board Member, 2023-present

- PLOS ONE, Academic Editor, 2023-present
- The AAAI National Conference on Artificial Intelligence (AAAI), Program Committee Member, 2019-2025
- Frontiers in Oncology, Review Editor, 2021-present
- Frontiers in Cell and Developmental Biology, Review Editor, 2021-present

Publications

2025:

1. H. Guo, Y. Xiao, S. Dong, J. Yang, P. Zhao, T. Zhao, A. Cai, L. Tang, J. Liu, H. Wang, R. Hua, R. Liu, Y. Wei, D. Sun, Z. Liu, M. Xia, Y. He, Y. Wu, T. Si, FY. Womer, F. Xu, Y. Tang, J. Wang*, W. Zhang*, **X. Zhang***, F. Wang*. Bridging animal models and humans neuroimaging as intermediate phenotypes linking genetic or stress factors to anhedonia. *BMC Medicine*, **23**, 38 2025.
2. L. Tang, R. Tang, S. Dong, J. Zheng, P. Zhao, R. Zhu, Y. Tang, **X. Zhang***, X. Gong*, and F. Wang*. Dissecting biological heterogeneity in major depressive disorder based on neuroimaging subtypes with multi-omics data. *Translational psychiatry*. 2025
3. Y. Xiao, S. Dong, C. Pan, H. Guo, L. Tang, **X. Zhang***, F. Wang*. Effectiveness of non-invasive brain stimulation on depressive symptoms targeting prefrontal cortex in functional magnetic resonance imaging studies: a combined systematic review and meta-analysis. *Psychoradiology*, kkae025, 2025.
4. Y. Xiao, F. Wang*, **X. Zhang***. When Biomarkers for Major Depressive Disorder Remain Elusive. *Medical Review* 2024, doi: 10.1515/mr-2024-0082

2024:

5. C. Pan, Q. Zhang, Y. Zhu, S. Kong, J. Liu, C. Zhang, F. Wang*, **X. Zhang***. Module control of network analysis in psychopathology. *iScience*, 27, 110302, 2024.
6. X. Xu, Y. Wang, X. Wei, F. Wang, **X. Zhang***. Attention-Based Acoustic Feature Fusion Network for Depression Detection. *Neurocomputing*, 128209, 2024.
7. Z. Su, R. Liu, Y. Wei, X. Xu, R. Zhang, Y. Wang, Y. Zhu, L. Wang, L. Liang, F. Wang*, **X. Zhang***. Temporal Dynamics in Psychological Assessments: A Novel Dataset with Scales and Response Times. *Scientific Data*, 11, 1046, 2024.
8. Y. Xiao, S. Dong, R. Zhu, FY. Womer, R. Zhang, J. Yang, L. Zhang, J. Liu, W. Zhang, Z. Liu*, **X. Zhang***, F. Wang*. A Neuroimaging-based Precision Medicine Framework for Depression. *Asian Journal of Psychiatry*, 91, 103803, 2024.
9. L. Wang, R. Liu, Y. Wang, X. Xu, R. Zhang, Y. Wei, R. Zhu, **X. Zhang***, F. Wang*. Effectiveness of a Biofeedback Intervention Targeting Mental and Physical Health among College Students through Speech and Physiology as Biomarkers using Machine Learning: A Randomized Controlled Trial. *Applied Psychophysiology and Biofeedback*, 49, 71-83, 2024.
10. Z. Lin, J. Zheng, Y. Wang, Z. Su, R. Zhu, R. Liu, Y. Wei, **X. Zhang***, F. Wang*. Prediction of the Efficacy of Group Cognitive Behavioral Therapy Using Heart Rate Variability Based Smart Wearable Devices: A Randomized Controlled Study. *BMC Psychiatry*, 24, 187, 2024.
11. C. Pan, J. Wang, D. Yan, C. Zhang*, **X. Zhang***. A Fast Algorithm for Diffusion Source Localization in Large-Scale Complex Networks. *Journal of Complex Networks*, 12, 2, cnae014, 2024.

12. Y. Zhu, R. Zhang, S. Yin, Y. Sun, F. Womer, R. Liu, S. Zeng, **X. Zhang***, F. Wang*. Digital Dietary Behaviors in Individuals with Depression: A Real-World Behavioral Observation. *JMIR Public Health and Surveillance*, 10, e47428, 2024.
13. C. Pan, Y. Ma, L. Wang, Y. Zhang, F. Wang, X. Zhang*. From Connectivity to Controllability: Unraveling the Brain Biomarkers of Major Depressive Disorder. *Brain Sciences*, 14, 509, 2024.
14. Z. Su, R. Liu, K. Zhou, X. Wei, N. Wang, Z. Lin, Y. Xie, J. Wang, F. Wang*, S. Zhang*, **X. Zhang***. Exploring the relationship between response time sequence in scale answering process and severity of insomnia: a machine learning approach. *Heliyon*, 10, 13, e33485, 2024.
15. L. Liang, Y. Wang, H. Ma, R. Zhan, R. Liu, R. Zhu, Z. Zheng, **X. Zhang***, F. Wang*. Research on Vocal Acoustic Features and Classification/Prediction Model of Major Depressive Disorders. *Frontiers in Psychiatry*, 2024.
16. J. Zheng, F. Womer, L. Tang, H. Guo, **X. Zhang**, Y. Tang*, F. Wang*. Integrative Omics Analysis Reveals Epigenomic and Transcriptomic Signatures Underlying Brain Structural Deficits in Major Depressive Disorder. *Translational Psychiatry*, 14, 17, 2024.
17. Y. Chen, P. Zhao, C. Pan, M. Chang, **X. Zhang**, J. Duan, Y. Wei, Y. Tang*, F. Wang*. State- and trait-related dysfunctions in bipolar disorder across different mood states: A graph theory study. *Journal of Psychiatry and Neuroscience*. 18, 49(1), E11-E22, 2024.
18. Y. Qiu, T. Lv*, **X. Zhang**, H. Hu, Y. Ma. Cooperation emerged and survived in scale-free networks in co-evolution and betrayer-prevailing circumstances. *Applied Mathematics and Computation*, 473, 128681, 2024.
19. T. Zhao, H. Guo, J. Yang, A. Cai, J. Liu, J. Zheng, X. Yao; P. Zhao, **X. Zhang**, R. Zhu, J. Wang, F. Wang. Repetitive Transcranial Magnetic Stimulation Reversing Abnormal Brain Function in Mood Disorders with Early Life Stress: from preclinical models to clinical applications. *Asian Journal of Psychiatry*, 97, 104092, 2024.
20. R. Song, P. Cao*, G. Wen, P. Zhao, Z. Huang, **X. Zhang**, J. Yang*, OR Zaiane. BrainDAS: Structure-aware domain adaptation network for multi-site brain network analysis. *Medical Image Analysis*, 96, 103211, 2024.
21. J. Zheng, X. Zong, L. Tang, H. Guo, P. Zhao, F. Womer, **X. Zhang**, Y. Tang, F. Wang. Characterizing the distinct imaging phenotypes, clinical behavior, and genetic vulnerability of brain maturational subtypes in mood disorders. *Psychological Medicine*, 2024. doi:10.1017/S0033291724000886
22. J. Liu, H. Guo, J. Yang, Y. Xiao, A. Cai, T. Zhao, FY. Womer, P. Zhao, J. Zheng, **X. Zhang**, J. Wang, R. Zhu*, F. Wang*. Visual cortex repetitive transcranial magnetic stimulation (rTMS) reversing neurodevelopmental impairments in adolescents with major psychiatric disorders (MPDs): a cross-species translational study. *CNS Neuroscience & Therapeutics*, 30, e14427, 2024.
23. J. Yang, H. Guo, A. Cai, J. Zheng, J. Liu, Y. Xiao, S. Ren, D. Sun, J. Duan, T. Zhao, J. Tang, **X. Zhang**, R. Zhu*, J. Wang*, F. Wang*. Aberrant Hippocampal Development in Early-Onset Mental Disorders and Promising Interventions: Evidence from a Translational Study. *Neuroscience Bulletin*, 40, 683-694, 2024.
24. J. Yang, R. Zhang, K. Zhou, J. Zhou, X. Wang, W. Yang, X. Zhang, X. Xu, L. Wang, Y. Wu, J. Li, **X. Zhang**, Y. Wang*, Y. Lin*, F. Wang*. Exploring Multiple Perspectives on Psychological Health of Adolescents in Relation to Gender and School Grade — Jiangsu Province, China, 2022. *China CDC Weekly*, 6(29): 713–718, 2024.

25. J. Zhou, J. Duan, X. Liu, Y. Wang, J. Zheng, L. Tang, P. Zhao, **X. Zhang**, R. Zhu*, F. Wang*. Functional network characteristics in adolescent psychotic mood disorder: associations with symptom severity and treatment effects. *European Child & Adolescent Psychiatry*, 33, 2319–2329, 2024.

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44. L. Zhang, R. Zhang, S. Han, FY. Womer, Y. Wei, J. Duan, M. Chang, C. Li, R. Feng, J. Liu, P. Zhao, X. Jiang, S. Wei, Z. Yin, Y. Zhang, Y. Zhang, **X. Zhang***, Y. Tang*, F. Wang*. Three major psychiatric disorders share specific dynamic alterations of intrinsic brain activity. *Schizophrenia Research*, 243, 322-329, 2022.
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2020:

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2019:

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2018:

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2015:

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2006:

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