Dr. Jieqiong Wang

Assistant Professor

University of Nebraska Medical Center

Department of Neurological Sciences

Durham Research Center II, Room 3604, S 45th St, Omaha, NE 68106

Office: +1-402-552-2496

Email: jiwang@unmc.edu

Official Website: https://www.unmc.edu/neurologicalsciences/about/faculty/wang.html

Lab Website: https://wanglab-unmc.github.io/

HIGHLIGHTS

- **Over 12 years of research experience** in Medical Imaging Processing/Analysis, Machine Learning/Artificial Intelligence, and Cognitive Neuroscience
- **Eight active grants** supported by NIH/OD, NIH/NCI, NIH/NIGMS, ACS, CHRI and other fundings
- **Two promising pending grants** from NIH/NIAAA and NIH/NIGMS.
- **Five completed grants** supported by NIH/NIGMS, NRI and other fundings
- Strong publication record, including **over 40** top-tiered journal and international conference papers, one book chapter, and one patent.
- Extensive hands-on experience in processing **multi-modal MRI data** (T1/fMRI/DWI/ASL), developing classification/prediction models of diseases, and statistical data analysis.
- Experience in image segmentation on **ultrasound imaging and MRI**
- Experience in longitudinal data processing/analysis
- Extensive collaboration with doctors, neuroscientists, radiologist, psychologists and clinicians in projects related to cancer, heart disease, addiction, visual diseases, Alzheimer's disease, and ADHD, etc.

POSITIONS

2023 -	University of Nebraska Medical Center	Assistant Professor
2017-2019	University of Pennsylvania	Postdoctoral Researcher
2015-2017	The Chinese University of Hong Kong & The Hong Kong Polytechnic University	Postdoctoral Fellow

EDUCATION

2010-2015	Ph.D. in Pattern Recognition and Intelligent Systems	Chinese Academy of Sciences
2006-2010	B.E. in Communication Engineering	Wuhan University (China)

RESEARCH INTERESTS

- Machine learning/Artificial intelligence, Medical imaging processing, imaging-genetics
- Cancer, Neurological/psychiatric disorders, Addiction, Heart disease

ONGOING AND RECENTLY COMPLETED PROJECTS I WANT TO HIGHLIGHT

- **Title:** Unveiling Adolescent BNST Development with Deep Learning: Implications for Alcohol Use and Negative Affect
  Role: PI
  Sponsor: NIH/NIAAA (1R21AA032098-01A1)
  Dates: TBA
  Costs: $275,000 (Dr. Wang's portion: $275,000)
  Status: Pending (**Score: 20**)

- **Title:** Nebraska Center for Cancer Prevention
  Role: Research Project Leader
  Sponsor: NIH/NIGMS
  Dates: TBA
  Costs: $11,575,125 (Dr. Wang's portion: $600,000)
  Status: Pending (**Score: 19**)

- **Title:** SCH: A Multi-Modal Transfer Learning Framework to Reduce Health Disparity for Breast Cancer
  Role: Co-I (Active)
  Sponsor: NSF (2500836)
  Dates: TBA
  Costs: $1,000,000 (Dr. Wang's portion: 16.7% effort)
  Status: Active

- **Title:** Leveraging Heterogenous Common Fund Data Sets and Beyond for Identifying Lung Cancer Subtypes
  Role: MPI
  Sponsor: NIH/OD (1R03OD038391-01)
  Dates: 09/01/2024 – 08/30/2026
  Costs: $307,000 (Dr. Wang's portion: $30% effort)
  Status: Active

- **Title:** Longitudinal drinking behaviors prediction in adolescents using neuroimaging data and machine learning
  Role: PI

Sponsor: Child Health Research Institute at UNMC/Children's Nebraska
Dates: 10/01/2024 – 09/30/2025
Costs: $ 50,000 (Dr. Wang's portion: $50,000)
Status: Active

- **Title:** AI-Driven Lung Cancer Detection: Enhancing Accuracy And Addressing Health Disparities In Rural Populations
  Role: PI
  Sponsor: American Cancer Society (IRG-22-146-07-IRG) and Buffett Cancer Center (NCI, CA036727)
  Dates: 5/01/2025 – 04/30/2026
  Costs: $ 60,000 (Dr. Wang's portion: $60,000)
  Status: Active

- **Title:** Longitudinal drinking behaviors prediction in adolescents using multi-modal MRI data and deep learning
  Role: PI
  Sponsor: Great Plains IDeA-CTR (1U54GM115458-01)
  Dates: 07/01/2024 – 06/30/2025
  Costs: $10,000 (Dr. Wang's portion: $10,000)
  Status: Active

- **Title:** Scientific Leadership and Agenda Setting for the NNTC Data Coordinating Center
  Role: Subcontractor
  Sponsor: National Institute of Mental Health
  Dates: 09/01/2023 – 08/31/2028
  Costs: $2,000,000 (Dr. Wang's portion: 5% effort)
  Status: Active

- **Title:** Nebraska Research Network in Functional Genomics
  Role: co-I
  Sponsor: DHHS/NIH/NIGMS (5P20GM103427-23S2)
  Dates: 06/20/2024 – 04/30/2026
  Costs: $958,437 (Dr. Wang's portion: 10% effort)
  Status: Active

- **Title:** An Accurate Machine Learning Framework for Childhood Acute Myeloid Leukemia Subtype Identification by Integrating Bulk and Single-Cell Multi-Omics Data Within and Beyond the CCDI Ecosystem
  Role: Co-project leader
  Sponsor: NIH/NCI (P30 CCSG Administrative Supplement, 3P30CA036727-37S5)
  Dates: 09/01/2023 – 08/31/2025
  Costs: $500,000 (Dr. Wang's portion: 10% effort)
  Status: Active

- **Title:** Measure the interactive effect of genetic AD risk factors and family connectedness on multi-modal brain age gaps using machine learning
  Role: Project leader
  Sponsor: NIH/NIGMS (3P20GM130447-04S1)
  Dates: 08/01/2023 – 01/31/2025
  Costs: $ 1,219,030 (Dr. Wang's portion: $200,000 direct cost)

Status: Completed

- **Title:** The Association between Brain Age and DNA Methylation Age at the Global and the Local Level
  Role: PI
  Sponsor: Cognitive Neuroscience of Development and Aging (CoNDA) Pilot Project Program (3P20GM130447-04S1)
  Dates: 02/01/2024 – 01/31/2025
  Costs: $50,000
  Status: Completed

- **An Artificial Intelligence Based Framework to Reduce Health Disparities for Breast Cancer**
  Role: MPI
  Sponsor: Nebraska Research Initiative Collaborative Grant
  Dates: 07/01/2024 – 06/30/2025
  Costs: $100,000 (Dr. Wang's portion: $36,000)
  Status: Completed

- **Machine Learning for Identifying Biomarkers Within and Between Brain Networks for Alcohol Use Disorder Diagnosis**
  Role: MPI
  Sponsor: Alcohol Center of Research-Nebraska (ACORN) Pilot Project Program
  Dates: 07/01/2023 – 06/30/2025
  Costs: $25,000
  Status: Completed

- **A Machine Learning Framework to Identify Biomarkers of Intrinsic Brain Networks across Different Psychiatric and Neurological Disorders**
  Role: PI
  Sponsor: Nebraska EPSCoR FIRST Award
  Dates: 12/01/2023 – 5/30/2025
  Costs: $25,000
  Status: Completed

PUBLICATIONS (*co-first author, #corresponding author)

1. Azzam M, Xu ZY, Liu R, Li L, Soh K, Challagundla K, Wan S, ***Wang JQ***#. A review on artificial intelligence-based brain age and related diseases. Briefings in Functional Genomics, 2025, 24:elae042, PMID: 39436320
2. Xu Z, Li L, Liu R, Azzam M, Wan S, ***Wang JQ***#**.** Functional Connectivity Alterations in Cocaine Use Disorder: Insights from the Triple Network Model and the Addictions Neuroclinical Assessment Framework. bioRxiv, 2024, 2024.11.12.623073.
3. Feng J*, Sun M*, Liu C, Zhang W, Xu C, ***Wang JQ***, Wang G, Wan S. SAMP: Identifying Antimicrobial Peptides by an Ensemble Learning Model Based on Proportionalized Split Amino Acid Composition. Briefings in Functional Genomics, 2024, vol. 23, pp. 879-890. PMID: 38712184; PMCID: PMC11071531.

4. Xiao H, ***Wang JQ***, Wan S. WIMOAD: Weighted Integration of Multi-Omics data for Alzheimer's Disease (AD) Diagnosis, bioRxiv, 2024, 2024.09.25.614862.
5. Quan P, Mao T, Zhang X, Wang R, Lei H, ***Wang JQ***, etc. Locus coeruleus microstructural integrity is associated with vigilance vulnerability to sleep deprivation, Human Brain Mapping, 2024, vol. 45.
6. H. Xiao, Y. Zou, ***J. Wang***, and S. Wan*, "A Review for Artificial Intelligence Based Protein Subcellular Localization", Biomolecules, 2024, vol. 14, no. 4, 409.
7. ***Wang JQ***, Wan S, Single cell meets metabolism and cancer biology. Frontiers in Oncology 13 (2023): 1125186.
8. Sun M, Li L, Xiao H, Feng J, ***Wang JQ***, Wan S. Bioinformatics Analysis of Omics Data for Biomarker Identification in Clinical Research, Volume II. Frontiers in Genetics, 14, p.1256468.
9. Wan S[#], ***Wang JQ*** [#]. A Sequence Obfuscation Method for Protecting Personal Genomic Privacy. *Frontiers in Genetics* (2022): 702.
10. Chai Y, Fang Z, Yang F, Xu SH, Deng Y, Raine A, ***Wang JQ***, Yu M, et.al. Two nights of recovery sleep restores hippocampal connectivity but not episodic memory after total sleep deprivation. *Scientific reports* 10.1 (2020): 1-11.
11. McCollum L, Das S, Xie L, Flores R, ***Wang JQ***, et. al. Oh Brother, Where Art Tau? Amyloid, Neurodegeneration, and Cognitive Decline without Elevated Tau. *NeuroImage: Clinical*, 2021, vol 3, p. 102717
12. Lempert K, Hamilton D, Xie L, Wissie L, Flores R, ***Wang JQ***, et.al. Neural and behavioral correlates of declarative memory are associated with temporal discounting in older adults. *Neuropsychologia*, 2020, vol 146, p. 107549.
13. Wetherill R, Rao HY, Hager N, ***Wang JQ***, Franklin T, Yong F. Classifying and Characterizing Nicotine Use Disorder with High Accuracy Using Machine Learning and Resting-State fMRI. *Addiction Biology*, 2019, pp. 811-821.
14. ***Wang JQ****, Zhang CC*, Wan SB, Peng G. Is congenital amusia a connectome disorder?: A diffusion MRI study combining tract- and network-based analysis. *Frontiers in Human Neuroscience*, 2017, 11(473).
15. Liu Y*, ***Wang JQ****, Zhang JS, Yin GH, Zhang Y, He HG, Peng Y. Altered brain activity in early Tourette syndrome children: a resting-state fMRI study. *Scientific Reports*, 2017, vol. 7, p. 4808.
16. ***Wang JQ***, Li T, Wang NL, Xian JF, He HG. Altered functional connectivity within and between the default model network and the visual network in primary open angle glaucoma patients: a resting-state fMRI study. *Brain Imaging and Behavior,* 2017, vol. 11, pp. 1154-1163.
17. ***Wang JQ****,* Li T*, Sabel B, Chen ZQ, Wen HW, Li JH, Xie XB, Yang DY, Chen WW, Wang NL, Xian JF, He HG. Structural brain alterations in primary open angle glaucoma: a 3T MRI study. *Scientific Reports*, 2016, vol. 6, p.18969.
18. ***Wang JQ***, Li T, Wang NL, Xian JF, He HG. Graph theoretical analysis reveals the reorganization of the brain network pattern in primary open angle glaucoma patients. *European Radiology,* 2016, vol. 26, pp. 3957-3967.
19. Wen HW*, Liu Y*, ***Wang JQ***, Rekik I, Zhang JS, Zhang Y, Tian HW, Peng Y, He HG. Combining tract- and atlas-based analysis reveals micro-structural abnormalities in early Tourette syndrome children. *Human Brain Mapping*, 2016, vol. 37, pp. 1903-1919.

20. ***Wang JQ***, Miao W, Li J, Li M, Zhen ZL, Sabel B, Xian JF, He HG. Automatic segmentation of the lateral geniculate nucleus: Application to control and glaucoma patients. *Journal of Neuroscience Methods*, 2015, vol. 255, pp. 104-114.
21. Li WJ, Li JH, ***Wang JQ***, Zhou P, Wang ZC, Xian JF, He HG. Functional reorganizations of brain network in prelingually deaf adolescents. *Neural Plasticity*, 2015, vol. 501, p. 216396.
22. ***Wang JQ***, Li WJ, Mao W, Dai D, Hua J, He HG. Age estimation using cortical surface pattern combining thickness with curvatures. *Medical & Biological Engineering & Computing*, 2014, vol. 52, pp. 331-341.
23. Liu Y*, Miao W*, ***Wang JQ***, Gao PY, Yin GH, Zhang LP, Lv CK, Ji ZY, Yu T, Sabel B, He HG, Peng Y. Structural Abnormalities in Early Tourette Syndrome Children: A Combined Voxel-Based Morphometry and Tract-Based Spatial Statistics Study. *PLoS ONE*, 2013, 8(9): e76105
24. Dai D, ***Wang JQ,*** Hua J, He HG. Classification of ADHD children through multimodal magnetic resonance imaging. *Frontiers in Systems Neuroscience*, 2012, 6:63.
25. Liu R, Wang S, Wan S, ***Wang JQ***[#]. Enhancing prostate pelvic multimodality data generating with conditional generative models: A Pix2Pix-based approach for MRI-to-PET synthesis, AACR Annual Meeting 2025, Chicago, IL, Apr. 2025.
26. Azzam M, Leuva H, Zhou M, Teply B, Bergan R, Bates S, Wan S, Fojo A, ***Wang JQ***[#]. Development of g-rate based random forest machine learning model to predict overall survival for patients with metastatic prostate cancer. AACR Annual Meeting 2025, Chicago, IL, Apr. 2025.
27. Li L, ***Wang JQ***, Wan S, Reducing Health Disparities for Prostate Adenocarcinoma by Integrating Multi-Omics Data via a Multi-Modal Transfer Learning Approach, Cancer Research, 2024, vol. 84 (6_Supplement), pp. 4800-4800.
28. Li L, Xiao H, Khoury J, ***Wang JQ***, Wan S. "RanBAL Identifying B-Cell Acute Lymphoblastic Leukemia Subtypes Based on an Ensemble Random Projection Model", Cancer Research, 2024, vol. 84 (6_Supplement), pp. 4907-4907.
29. L. Li, ***J. Wang*** and S. Wan, "Reducing Health Disparities for Prostate Adenocarcinoma by Integrating Multi-Omics Data via a Multi-Modal Transfer Learning Approach", Cancer Research, 2024, vol. 84 (6_Supplement), pp. 4800-4800.
30. Zhou P, ***Wang JQ***, Li T, Wang NL, Xian JF, He HG. Abnormal interhemispheric resting-state functional connectivity in Primary Open-Angle Glaucoma. *2016 Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBS 2016)*.
31. Wen HW*, Liu Y*, ***Wang JQ***, Zhang JS, Peng Y, He HG. A diagnosis model for early Tourette syndrome children based on brain structural network characteristics. *2016 SPIE Medical Imaging on Biomedical Applications in Molecular, Structural, and Functional Imaging (SPIE 2016)*, San Diego, USA, Mar. 2014, vol. 9785, pp. 97852R-97852R-9
32. Wen HW*, Liu Y*, ***Wang JQ***, Zhang JS, Peng Y, He HG. Using support vector machines with tract-based spatial statistics for automated classification of Tourette syndrome children. *2016 SPIE Medical Imaging on Biomedical Applications in Molecular, Structural, and Functional Imaging (SPIE 2016)*, San Diego, USA, Mar. 2014, vol. 9785, pp. 97852Q-97852Q-9
33. ***Wang JQ***, Hu L, Li WJ, Xian JF, Ai LK, He HG. Alterations of functional connectivity in amblyopia patients: A resting-state fMRI study. *2014 SPIE Medical Imaging on Biomedical Applications in Molecular, Structural, and Functional Imaging (SPIE 2014)*, San Diego, USA, Feb. 2014, vol. 9038, pp. 903809-1 – 903809-8

34. ***Wang JQ***, Dai D, Li M, Hua J, He HG. Human Age Estimation with Surface-Based Features from MRI Images. *2012 Machine Learning in Medical Imaging (MLMI 2012)*, Nice, France, Oct. 2012, pp.111 – 118.
35. Lu X, ***Wang JQ***, Wang Z, Sun H. Flooded area detection using multi-temporal TerraSAR-X data. *2009 Asia-Pacific Conference on Synthetic Aperture Radar (APSAR 2009)*, Xi'an China, Sep. 2009, pp. 155-159.
36. Li L, ***Wang JQ***, Wan S, Reducing Health Disparities for Prostate Adenocarcinoma by Integrating Multi-Omics Data via a Multi-Modal Transfer Learning Approach, Cancer Research, 2024, vol. 84 (6_Supplement), pp. 4800-4800.
37. ***Wang JQ***, Li T, Wang NL, Xian JF, He HG. Altered functional connectivity and connections within and between sub-networks in primary open-angle glaucoma: a resting-state fMRI study. The 4th Shanghai Jiaotong University Interdisciplinary Forum for Science, Medicine and Technology, Shanghai, China, 2015
38. ***Wang JQ***, Li T, Chen ZQ, Wang NL, Xian JF, He HG. Brain network abnormalities in primary open angle glaucoma patients. *2015 Organization for Human Brain Mapping (OHBM 2015)*, Honolulu, USA, 2015.
39. Wen HW, Liu Y, ***Wang JQ***, Peng Y, He HG. Atlas-based DTI analysis using LDDMM in early Tourette syndrome children. *2015 Organization for Human Brain Mapping (OHBM 2015)*, Honolulu, USA, 2015.
40. ***Wang JQ***, Li WJ, Hu L, Ai LK, He HG. Functional Brain Abnormalities in Amblyopia Patients' Rest-state fMRI. *2013 Organization for Human Brain Mapping (OHBM 2013)*, Seattle, USA, Jun. 2013.

BOOK CHAPTER

- He HG, Wen HW, Dai D, ***Wang JQ***. Computer-Aided Prognosis: Accurate Prediction of Patients with Neurologic and Psychiatric Diseases via Multi-modal MRI Analysis, in Artificial Intelligence in Decision Support Systems for Diagnosis in Medical Imaging, K. Suzuki and Y. Chen, Editors. 2018, Springer International Publishing: Cham. p. 225-265.

PATENTS

- He HG, ***Wang JQ***. An automatic segmentation method of human lateral geniculate nucleus, CNIPR: CN 103700104.