

Yile (Wayne) Wang

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SUMMARY

Ph.D. candidate in Cognition & Neuroscience with expertise in computational brain modeling, neuroimaging analysis, and high-performance computing. Experienced in managing large clinical datasets, building individualized brain network models, and leading interdisciplinary projects that integrate neuroscience, machine learning, and clinical data to uncover mechanisms of brain functions and diseases.

EDUCATION

The University of Texas at Dallas, Ph.D., Cognition and Neuroscience M.S., Applied Cognition and Neuroscience (Computational Modeling track), Southern Medical University, B.S., Psychology	Richardson, TX Aug 2021 – expected May 2026 (GPA: 3.94/4) Aug 2019 – May 2021 (GPA: 3.93/4) Guangzhou, China Aug 2014 – May 2018
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HONORS & AWARDS

2023 Marlane Miller Visionary New Scientist Award: \$25,000	Oct 2023
Society for Neuroscience Trainee Professional Development Award: \$1,000	Nov 2022
The University of Texas at Dallas Master's Research Fellowship Program: \$1,500	July 2021

SKILLS

Programming: C/C++, Python, Java, R, Matlab, Bash;
Databases and Cloud: MySQL, MongoDB, AWS, Google Cloud;
Technologies/Frameworks: Git, Docker, Neuroimaging (FSL, Freesurfer);
Statistics: Experimental Design; Multivariate Analyses; Statistical Machine Learning.

RESEARCH & WORK EXPERIENCES

Research Assistant, UTD Aug 2021– Aug 2025

Project1: Computational Modeling and Biomarker Discovery in Alzheimer's Disease

- Built **individualized** brain network models using TheVirtualBrain (TVB) platform and structural MRI/DTI data to **simulate** large-scale brain dynamics in Alzheimer's patients.
- Managed and processed clinical datasets from over hundreds of patients, spanning MRI, cognitive assessments, and behavioral metrics;
- Applied biophysical modeling techniques (e.g., mean-field dynamics, criticality analysis) to conduct brain simulations in patients with Mild Cognitive Impairment and Alzheimer's Disease.
- Extracted computational **biomarkers** and performed multivariate discriminant analysis to stratify Mild Cognitive Impairment (MCI) subgroups; Achieved successful prediction with 80% specificity rate of conversion to AD in MCI cases in 4 years before clinical diagnosis.

Project2: Representational Alignment between Human Brain and Deep Convolutional Neural Network

- Designed a new training framework for DCNN architecture with a multi-layer encoder to align deep neural network model internal representation with human brain activity. **It leads to 2 publications.**
- Developed a test pipeline to calculate the similarity of behavioral and neural responses between output from human and neural network based on the *brain-score* platform.

HPC Research Assistant (NSF funded), Office of Information and Technology, UTD Aug 2023 – May 2024

- Deployed TheVirtualBrain on server with a **PostgreSQL** backend to support multi-user simulations and data management.
- Developed and validated UK Biobank MRI preprocessing pipelines within a **CUDA-compatible container**.

Undergraduate Research Assistant, Oct 2016 – May 2019

- Conducted a literature review about the neural mechanisms of social pain, wrote and published a **review paper** as the first author
- Developed, validated, and tested a new tool called "The Chemosensory Pleasure Scale" for measuring hedonic capacity. **It leads to 3 academic publications.**

OPEN-SOURCE PROJECTS

Multivariate Statistical Analysis in R ([Github](#)) | R, bookdown

- Developed an R-based "cookbook" implementing key multivariate techniques—including PCA, Discriminant Analysis, etc.
- Applied the multivariate statistical analyses to food product preference research based on customers' sensory data.

Fake Instagram Accounts Detection ([Github](#)) | Python

- Built and trained a supervised machine learning model (logistic regression with gradient descent) on a Kaggle dataset of 63,795 Instagram users and 17 features. Performed data cleaning, feature engineering, and evaluation to identify fake accounts.

Dynamical Network Analysis Toolbox ([Github](#)) | Python

- Developed a collection of analysis tools based on dynamical system theory and graph theory with Python implementations. The notebook includes the infection model (SIR), diffusion model, Erdos-Renyi Random Graph, etc.

Achieving a Human Brain-like Vision Model ([Github](#)) | Pytorch

- Designed an innovative training framework for DCNN architecture with a multi-layer encoder in Pytorch to incorporate human brain data to align model output with human brain activity.
- Designed a personalized, layer-wise alignment pipeline using Representational Similarity Analysis (RSA), enabling model adaptation to individual neural and behavioral responses.

PUBLICATIONS

Total citation: **112**; 6 publications in **Machine Learning and Psychiatry**.

Peer-reviewed Journal Publications

- Zitong Lu, **Yile Wang**. (2025). Teaching CORnet Human fMRI Representations for Enhanced Model-Brain Alignment. Cognitive Neurodynamics. 19 (1), 61.
- Li, Z., Huang, G., Li, Z., Li, S., **Wang, Y.**, Zhao, J., ... & Zou, L. (2020). Chemosensory Anhedonia in Patients with Schizophrenia and Individuals with Schizotypy: A Questionnaire Study. Frontiers in Psychiatry, 11, 481.
- Zhao, J., Gao, Z.*, Li, **Y.***, **Wang, Y.***, Zhang, X., & Zou, L. (2019). The food neophobia scale (FNS): Exploration and confirmation of factor structure in a healthy Chinese sample. Food Quality and Preference, 79, 103791.

- Zhao, J.*, **Wang, Y.***, Ma, Q., Zhao, J., Zhang, X., & Zou, L. (2019). The Chemosensory Pleasure Scale: A New Assessment for Measuring Hedonic Smell and Taste Capacities. *Chemical Senses*, 44(7), 457–464.
- **Wang, YL.** & Zou, LQ. (2018). The Neural Mechanisms of Social Pain. *Progress in Biochemistry and Biophysics*, 45(07):714-722. [in Chinese]

Conference

- **Yile Wang**, Ana Solodkin (2025). Early Detection of Alzheimer's Disease: a Computational Approach. (Comet Computing Conference, Lightning Talk selected).
- Zitong Lu, **Yile Wang**, Julie D Golomb. (2024). ReAlnet: Achieving More Human Brain-Like Vision via Human Neural Representational Alignment. (ICLR 2024 Workshop accepted).
- **Y Wang**, L Arbabyazd, AR McIntosh, V Jirsa, P. Ritter, A Solodkin. (2022). Functional lateralization in Alzheimer's disease (AD): TheVirtualBrain (TVB) Computational Approach. (SfN 2022)

Preprint

- Zitong Lu, **Yile Wang**, JD Golomb (2025). Achieving more human brain-like vision via human eeg representational alignment. ArXiv: 2401.17231 v2.

*These authors contribute equally.