Jialan Zheng

Tsinghua University, Beijing, P.R. China
Phone: (+86)18060526779
Email: zhengjl21@mails.tsinghua.edu.cn

Female, December 17th, 2002

EDUCATION

9/2021 – 6/2025 **Bachelor of Science & Engineer (Dual Bachlor's Degree)**
Chemical Biology & Biomedical Engineering, Tanwei College, Tsinghua University, China

- **Overall GPA:** 3.98/4.00, **Rank:** 1/15
- **Core Courses:** Calculus (A+) / Linear Algebra (A) / Chemical Principle (A) / Physics (A) / The Practice of C Programming (A+) / Introduction to Complex Analysis (A+) / Probability and Statistics (A+) / Electrical and Electronic Engineering (A) / Signals and Systems (A) / Biochemistry (A) / Structure and Function of Human Body (A) / Electrophysiological Principle and Experiment (A) / Digital Signal Processing (A–) / Medical Image Processing (A+) / Biomedical Electronics (A+) / Principles of Magnetic Resonance Imaging (A+)/ Physiological System Simulation and Modeling (A+) / Biomedical Engineering Design Program (A+) / Basic Practical Biochemistry (A+) / Neural Modeling and Data Analysis (A+)

RESEARCH EXPERIENCES

3/2022 – 3/2023 **Research related to Brain–Computer Interface**
Advisor: Xiaorong Gao, Department of Biomedical Engineering, Tsinghua University

- ✧ Classify the EEG data using algorithms like LDA, STDA, HDCA, EEGNet, XGB–DIM;
- ✧ Perform RSVP experiment.

8/2022 – 8/2022 **Research related to Micro–Fluidic Chip**
Advisor: Jinming Lin, Department of Chemistry, Tsinghua University

- ✧ Design a micro–fluidic chip to fabric oil–water–mixed droplets;
- ✧ Perform detection tasks like water quality monitoring using equipment related to micro–fluidic chips.

6/2024 – 9/2024 **Research related to Diffusion MRI**
Advisor: Susie Huang & Hong–Hsi Lee, Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Harvard University

- ◆ **Project 1: Deep Learning Accelerates Brain Complex Microstructure Model Fitting**
  - ✧ Utilizing Spherical Harmonics to Represent Complex Models such as AxCaliber and SANDI;
  - ✧ Accelerating Model Fitting Using the deep learning Method.
- ◆ **Project 2: Estimating Fiber Diameter Using OGSE Sequence:**
  - ✧ Conduct OGSE sequence scanning on Connectome 2.0 for the first time;
  - ✧ Testing with phantom containing dynemma fiber microstructure, correctly estimating its fiber diameter.

4/2023 – present **Research related to Diffusion MRI**
Advisor: Qiyuan Tian, Department of Biomedical Engineering, Tsinghua University

- ◆ **Project 1: COVID–19 Impact on Neural System:**
  - ✧ Comparison between subjects infected with COVID–19 and control subjects
  - ✧ Use DTI, DKI, NODDI models to analyse the microstructures of each subject and conduct statistic analysis tract–wise and voxel–wise to make comparisons between groups.
  - ✧ An abstract (first author) submitted to the Annual Meeting of International Society Magnetic Resonance in Medicine (ISMRM).
- ◆ **Project 2: Short–Range Fibers:**
  - ✧ Impacts of diffusion MRI spatial resolution on the short–range structural connectivity estimation
  - ✧ Down–sample the HCP data to estimate the short–range structural connectivity under different spatial resolution;
  - ✧ Obtain real data to evaluate the short–range structural connectivity under different spatial resolution with gSlider sequence;
  - ✧ Recipient of the Tsinghua University Tanwei College Comprehensive Excellence Award for Scientific Training
- ◆ **Project 3: MR–guided Focused Ultrasound (MRgFUS):**

- ✧ Review the MRgFUS methodology and write a related overview as a guide for clinicians.

◆ **Project 4: Diffusion MRI Based Study of Human Brain Development**

- ✧ Using dHCP Dataset and Real Data to Study Fetal and Neonatal Neurodevelopment;
- ✧ Completing Preprocessing, Model Fitting, Tractography, and ROI Analysis Tasks;
- ✧ Supported by Tsinghua University Academic Advancement Program and Beijing Natural Science Foundation。

SELECTED CONFERENCE PUBLICATIONS

1. **Zheng J,** Yang C, Zhong W, Wang Z, Li H, Li Z, Liu M, Yang H, Cao X, Liao C, Salat DH, Huang SY, Tian Q. Effect of Diffusion MRI Acquisition and Nominal Spatial Resolutions on Fiber Reconstruction and Connectivity Estimation. *ISMRM Workshop on 40 years of Diffusion: Past, Present & Future Perspectives* (Oral Presentation)
2. **Zheng J**, Liu J, Yang C, Yang H, Li Z, Li H, Ding H, Zhao X, Tian Q. Short-term White Matter Microstructural Changes in Young Adults Infected with SARS-COV-2 Omicron Variant. *The Annual Meeting of ISMRM*, 2024. (Digital Poster)
3. **Zheng J**, Yang C, Zhong W, Wang Z, Li H, Li Z, Liu M, Yang H, Cao X, Liao C, Salat DH, Huang SY, Tian Q. Impacts of diffusion MRI spatial resolution on the short-range association fiber reconstruction and connectivity estimation. *The Annual Meeting of ISMRM, 2025* (Traditional Poster).
4. **Zheng J**, Zhong W, Sung D, Gerold J, Tian Q, Guo H, Huang SY, Lee HH. Revealing Diffusion Frequency-Dependence in Surface-to-Volume Ratio limit using OGSE sequence on the Connectome 2.0 Scanner. *The Annual Meeting of ISMRM, 2025* (Traditional Poster).
5. Sung D, Zhong W, **Zheng J,** Tian Q, Guo H, Huang SY, Lee HH. Revealing membrane integrity in human brain using oscillating-gradient diffusion sequence in two frequency-varying regimes. *The Annual Meeting of ISMRM, 2025* (Oral). [MERIT GOLD AWARD]
6. **Zheng J**, Yang C, Zhong W, Li H, Wang Z, Cao X, Liao C, Tian Q. Quantification of Human Brain White Matter Myelination using ViSTa MRI Fingerprinting. *The Anual Meeting of OHBM, 2025* (Poster).

JOURNAL PUBLICATIONS

1. **Zheng J**, Li ZY, Zhong W, Wang Z, Li Z, Yang H, Liu M, Cao X, Liao C, Salat DH, Huang SY, Tian Q. "Effects of diffusion MRI spatial resolution on human brain short-range association fiber reconstruction and structural connectivity estimation" *bioRxiv*, 2025. https://doi.org/10.1101/2025.06.04.657810
2. Yang H, Wang G, Li Z, Li H, **Zheng J**, Hu Y, Cao X, Liao C, Ye H, Tian Q. "Artificial intelligence for neuro MRI acquisition: a review" *Magnetic Resonance Materials in Physics, Biology and Medicine, 2024.*

HONORS AND AWARDS

2025	Outstanding Bachelor's Graduate of Tsinghua University (2/130)
2025	Outstanding Bachelor's Graduate of Beijing (6/130)
2024	National Scholarship (5/130), Ministry of Education, P.R. China
2024	First Prize in National BME Innovation Design Competition, Chinese society of BME
2023	National Scholarship (2/130), Ministry of Education, P.R. China
2023	Scholarship for Science and Technology Innovation Excellence, Tsinghua University
2022	Scholarship for Comprehensive Excellence, Tsinghua University
2022	Scholarship for Academic Excellence, Tanwei College

FUNDING

4/2024 – 12/2024	Academic advancement program, Projects funded by Tsinghua University, ¥20000
11/2024 – 11/2026	Beijing Municipal Natural Science Foundation, Projects funded by the "Qiyan Project", ¥50000

SKILLS

Programming: Python, PyTorch, MATLAB, C, Verilog, STM32, LaTeX
Language: Mandarin Chinese (native speaker), English (TOEFL 93)