

Education

- 2020/08 - 2024/06 **Southern University of Science and Technology (SUSTech)**, *Undergraduate*.
- **Major / GPA:** Intelligent Medical Engineering; GPA: 3.84 / 4; Rank 2 / 22.
 - 2022 - 2023 SUSTech Outstanding Student Scholarships - **Second Prize**
 - 2021 - 2022 Department of Biomedical Engineering "**Fortunatt**" **Scholarship**
 - 2021 - 2022 SUSTech Outstanding Student Scholarships - **First Prize**
- 2023/02 - 2023/07 **University of Zurich & ETH Zurich**, *Regular Visiting Student*.
- **Main Subject / GPA:** Neuroinformatics; 5.3 / 6.

Research Experience

Harvard Medical School (Undergraduate Research Assistant), Supervisor: Prof. Jingyuan Chen.

- 2023/07 - 2024/02 In this study, we applied a connectivity gradient-based analytical scheme on a resting-state fPET-fMRI dataset, aiming to characterize the detailed cortical organization of glucose metabolic dynamics (using fPET) and understand how it differs from the hemodynamics (using fMRI) based functional network structures.
- **Contribution:** Main contributor; Writing the majority of the code; Drafting the abstract.
- ### Southern University of Science and Technology, Supervisor: Prof. Quanying Liu.
- 2023/05 - 2023/08 This project aims to integrate principles of cognitive science into tests for artificial general intelligence (AGI). We conducted a comprehensive review of how cognitive science can be merged with large language models, with the goal of constructing platforms to study multidimensional intelligence.
- **Contribution:** Second author; Literature searching; Writing the manuscript; Figure design.
- 2022/09 - Now We collected calcium imaging data from zebrafish brains under various drug conditions using epifluorescence microscopy. Subsequent data analysis was performed to explore the effects of distinct drugs on neural activity across various brain regions.
- **Contribution:** Main contributor; Writing Code for preprocessing and data analysis.
- 2022/03 - 2022/07 We proposed a transfer learning framework to investigate the relationship between cognitive tasks, and compared the task relations reflected by transfer learning to that defined by task-evoked activities.
- **Contribution:** Analyzed fMRI data collected from *Neurosynth*; Writing the manuscript.

Publications, Submitted Papers and Posters

- 2024 / 03 Qu, Y., Wei, C., **Du, P.**, Che, W., Zhang, C., Ouyang, W., Bian, Y., Xu, F., Hu, B., Du, K., Wu, H., Liu, J., & Liu, Q. Integration of cognitive tasks into artificial general intelligence test for large models[J]. Accepted by *iScience*.
- 2024 / 01 Qu, Y., **Du, P.**, Wei, C., Che, W., Zhang, C., Ouyang, W., Bian, Y., Xu, F., Hu, B., Du, K., Wu, H., Liu, J., & Liu, Q. Promoting interactions between cognitive science and large language models[J]. *The Innovation*, 2024, 5(2).
- 2023 / 12 **Du, P.**, Coursey, S., Xu, T., Polimeni, J., Wey, H., Liu, Q., & Chen, J. (2023, December). Human Cerebral Cortex Organization Estimated by Functional PET-FDG "Metabolic Connectivity". Accepted by *The Organization for Human Brain Mapping (OHBM) 2024 Annual Meeting*.
- 2023 / 07 Qu, Y.*, Che, W.*, **Du, P.**, Jian, X., & Liu, Q. (2023, July). Assessing Generalization of Cognitive Tasks Using Multi Regional Modular Recurrent Neural Networks With Transfer Learning. Poster accepted to *5th Chinese Computational & Cognitive Neuroscience Conference*.
- 2023 / 06 **Du, P.**, Che, W., Huang, R., & Liu, Q. (2023, June). CT image segmentation of key organs for nasopharyngeals cancer radiation therapy. Poster accepted to "*Interdisciplinary Design*" - *Project Demonstration 2023*, College of Engineering, SUSTech.
- 2022 / 07 Qu, Y., Jian, X., Che, W., **Du, P.**, Fu, K., & Liu, Q. (2022, July). Transfer learning to decode brain states reflecting the relationship between cognitive tasks. In *International Workshop on Human Brain and Artificial Intelligence* (pp. 110-122). Singapore: Springer Nature Singapore.

Awards

- 2022 / 07 2022 CLS-CIBR-IDG – **Merit Student of Summer School in Neuroscience**
- 2022 / 06 China College Student Innovation Training Program – **Undergraduate Research Grant**
- 2022 / 06 2022 Guangdong Biomedical Engineering Design Competition – **First Prize**
- 2022 / 05 13th "Challenge Cup" Guangdong Entrepreneurship Plan Competition – **First Prize**
- 2021 / 09 Contemporary Undergraduate Mathematical Contest in Modeling – **Winning Prize**
- 2019 / 11 Certified Software Professional-Senior (CSP-S) – **First Prize**
- 2019 / 05 The 13th Asia and Pacific Informatics Olympiad (APIO) – **Bronze Medal**
- 2018 / 11 National Olympiad in Informatics in Provinces (NOIP) – **First Prize**

Summer Schools and Competitions

- 2022 / 08 **2022 Neuromatch Academy Computational Neuroscience Summer School.**
 - I studied computational neuroscience fundamentals, conduct a project on RNN and working memory with my teammates, and presented our results to other teams.
- 2022 / 07 **2022 CLS-CIBR-IDG Summer School in neuroscience.**
 - I attended neuroscience lectures in a summer school, participated in a team presentation on a selected paper, and was recognized with a Merit Student Award.
- 2022/03 - 2022/06 **2022 Guangdong Biomedical Engineering Design Competition, Supervisor: Prof. Quanying Liu.**
 - We developed a deep learning model, integrating Transformer and UNet, to label key organs in CT images for radiotherapy, employed a unique pre-training approach for high accuracy and lower computational cost, and won first prize in the competition.
 - **Contribution:** Team leader; Main developer of the model; Writing project report.
- 2021/11 - 2022/05 **13th "Challenge Cup" Entrepreneurship Competition, Supervisor: Prof. Quanying Liu.**
 - We developed a business plan for manufacturing intelligent brain health monitors for severely ill newborns, and won first prize in the competition.
 - **Contribution:** Team leader; Technical guidance; Writing business plan.

Presentation

- 23 Feb 2024 **The organization of human cerebral cortex estimated by functional PET-FDG: the promise and controversy of "metabolic connectivity"** .
 - "Science on Tap", at Athinoula A. Martinos Center for Biomedical Imaging, Harvard Medical School

Teaching experience

- S 2021 & S 2022 **JAVA Programming A, Teaching Assistant, SUSTech.**
 - **Responsibilities include:** Grading exams and assignments; Holding weekly sessions to help students fully understand course materials; Designing assignments.
- S 2022 & F 2022 **Workshop on Basic Programming, Organizer, SUSTech.**
 - **Responsibilities include:** Designing informal workshops to help students gain a better grasp of programming; Leading review sessions for exam preparation.

Extracurricular Experience

- 2023/02 - 2023/07 **Member of Foundation for the Reformed Student Houses, Zurich.**
- 2021/10 - Now **"Sapling" Animal Protection Society, SUSTech.**
- 2021/06 - 2022/06 **Student Tutor, Shuren college, SUSTech.**
- 2020/08 - 2021/06 **Member of Volunteer Federation, SUSTech.**

Language Ability

English: TOEFL score 106. (Reading 30, Listening 29, Speaking 24, Writing 23)

Technical Skills

Proficient: JAVA, Python, Freesurfer, Matlab, C/C++, Latex, Git, Linux, Machine Learning.

Working Knowledge: MNE, SPM, FSL, AFNI, Connectom Workbench, R, HTML, CSS, Circuit Design, Optical Experimentation.