Zhou Yubin

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Education

South China University of Technology (SCUT), Guangdong, China 2021 – Present

Undergraduate student in Biomedical Engineering (BME), expected July 2025
GPA: 3.51/4.00
Core Courses: Molecular Biology (96), Signals and Systems (91), Electric Circuits and Electronics (89), Digital Signal Processing (88), Python Programming (87), Principle and Application of Microcomputer (86), Medical image processing (86), Biochemistry (85)

Experience

SCUT MINI(Medical Information and Neuroimaging) Lab 2022 – Present

Advised by Prof. Kai Wu. Research on biomedical signal processing, medical artificial intelligence and human brain connectomics in automatic diagnosis of stroke, depression and schizophrenia, and explore the mechanism of brain structure and functional damage within these diseases.

- **Design of auxiliary diagnosis algorithm for schizophrenia based on feature fusion of EEG and ECG**
  Entry for 8^{th} National Biomedical Engineering Innovation Design Competition for College Students. Calculated brain functional network features, heart rate variability features and heart-brain coupling features to build machine learning models for automatic diagnosis; Deep learning models using ResNet were built based on original EEG and ECG also. As the team leader, I made major contributions to the methodology, codes, experiments and technical report. This work won the second prize in the finals.
- **(Brain Research Bulletin, Second author) Discriminative analysis of schizophrenia patients using an integrated model combining 3D CNN with 2D CNN: A multimodal MR image and connectomics analysis**
  Propose a novel method for multi-dimensional mining of fMRI image information using an integrated model, which is proposed for the discriminative analysis of schizophrenia patients. This method uses 2D FC matrices based on gray matter maps and 3D T1 images as the input of the neural network, allowing the model to simultaneously extract spatial topology information and brain functional connection information. Experiments have shown that our method achieved better performance beyond state-of-the-art methods.

Skills

- Programming Languages: Python > MATLAB
- Maths: Calculus, Linear Algebra, Probability, Statistics
- Platform&Tools: Windows; PyCharm, VS Code, JupyterLab, Git, Markdown, LaTeX
- Frameworks: PyTorch, Pandas, Matplotlib, NumPy, SciPy, OpenCV, MNE

Honors and Awards

Meritorious Winner, Interdisciplinary Contest In Modeling (6%) May. 2022
2^{nd} *prize*, National Biomedical Engineering lnnovation Design Competition for College Students Jul. 2023
2^{nd} *prize*, Hongpingchangqing Fund (2k CNY for 3 team members) Sep. 2023
3^{rd} *prize*, University Scholarship (1.5k CNY) Oct. 2023
3^{rd} *prize*, Zhuoyue Scholarship (10k CNY) Nov. 2023

Miscellaneous

- Time available for internship: Jan 15. 2024 - May 31. 2024 (may change based on course schedule)
- Languages: English - CET6 Grade 452, Mandarin - Native speaker