WENXIN CHE | RESUME

University: Southern University of Science and Technology (SUSTech)

Major: Intelligent Medical Engineering

GPA: 3.75 / 4.0 & 91.12 / 100.0

Email: chewx2020@mail.sustech.edu.cn

Languages: English (C1), German (A1), Chinese

Education

2023.2 ~ 2023.6 — **University of Zurich & ETH Zurich**
- ✓ Regular visiting student at the University of Zurich (UZH). Learning courses from the Institute of Neuroinformatics, which is the joint department of the UZH and ETH.
- ✓ **Main courses:** Computation in Neural Systems, Models of Computation, Comparative Behavioral Neuroscience, Clinical Neuroscience.

2020.9 ~ now — **Southern University of Science and Technology**
- ✓ **Great progress in GPA:** 3.46 (first year), **3.89** (second year), **3.95** (third year).
- ✓ Won a **first-class scholarship** (overall score ranking **top 2%**) in 2022.
- ✓ Won a "**scientific climbing star**" nomination award in 2021.
- ✓ **Main courses:** Machine Learning and its medical application, Artificial Intelligence, Neurobiology, Probability Theory and Statistics, Linear Algebra, Signals and Systems, Medical Image Processing, Principles of Biomedical Imaging.

Certificates

Year		
2022	**College Student Entrepreneurship and Innovation Program**	National - **Project leader**
2022	**Collegiate Biomedical Engineering Innovation Design Competition**	Provincial - **First Prize**
2021	**"Challenge Cup" Entrepreneurship and Innovation Competition**	Provincial - **Gold medal**
2021	**ACM-ICPC (International Collegiate Programming Contest) Regionals**	National - **Gold medal**
2021	**CCPC (China Collegiate Programming Contest) Guangdong Province**	Provincial - **Gold medal**
2021	**ACM-ICPC Asia East Continent Finals**	National - **Silver medal**
2021	**CCPC (China Collegiate Programming Contest) National Final**	National - **Bronze medal**
2021	**Undergraduate Mathematical Contest in Modeling**	Provincial - **Winning prize**
2020	**CCPC (China Collegiate Programming Contest) for girls**	National - **2nd, Gold medal**
2020	**CCPC (China Collegiate Programming Contest) Regionals**	National - **Silver medal**
2020	**CCPC (China Collegiate Programming Contest) Regionals**	National - **Bronze medal**

Research Experiences

2023.7 ~ 2023.12
2023.7 ~ 2023.12 — **Massachusetts Institute of Technology** — Supervisor: Guangyu Robert Yang
- ✓ The research is about investigating on spontaneous emergence of electromyographic signals similarity phenomenon during the execution of motor cognition task optimization using Spiking Recurrent Neural Networks(SRNN) research models.

2021.7 ~ now
2022.11 ~ now — **Southern University of Science and Technology** — Supervisor: Quanying Liu
- ✓ **Assessing Generalization of Cognitive Tasks using Multi-regional Modular Recurrent Neural Networks with Transfer Learning**
- ✓ **Methods:** we proposed a multi-regional modular recurrent neural network to simulate the cognitive processes. Here a transfer learning approach is adopted to investigate generalizability across tasks. I did the whole programming and training work.

> ✓ **Results:** Better transferability is demonstrated between cognitive tasks in the same category, and the activation of models and found different firing patterns corresponding to specific trigger conditions and modalities.

2022.3 ~ 2022.6
> ✓ **Transfer learning to decode brain states reflecting the relationship between cognitive tasks**
> ✓ **Methods:** We propose a transfer learning framework to reflect the relationship between cognitive tasks, and compare the task relations reflected by transfer learning and by the overlaps of brain regions (e.g., neurosynth).

2022.6 ~ 2022.9
2022.6 ~ 2022.11

New York University (Shanghai)   Supervisor: Xing Tian
> ✓ **Analysis of non-suicidal self-injury patients based on resting-state EEG signals**
> ✓ **Methods:** I completed the whole process of data analysis based on resting EEG signals on NSSI (non-suicidal self-injury) patients. Signal analysis methods include source estimation analysis, frequency analysis, functional connectivity analysis, and the linear regression of the functional connectivity in certain brain regions and medical diagnosis scores.
> ✓ **Results:** Some brain regions with higher activation values in NSSI patients than those of healthy people have been found.

⟫⟫⟫ Publications

✓ Qu Y, Jian X, Che W, et al. Transfer learning to decode brain states reflecting the relationship between cognitive tasks[C]//International Workshop on Human Brain and Artificial Intelligence. Singapore: Springer Nature Singapore, 2022: 110-122.

Under Review:

✓ Infusing cognitive science into artificial general intelligence test facilitates evolution and safety of large models
✓ Assessing Generalization of Cognitive Tasks using Multi-regional Modular Recurrent Neural Networks with Transfer Learning

⟫⟫⟫ Posters

2023.7
✓ **Assessing generalization of cognitive tasks using multi-regional modular recurrent neural networks with transfer learning** – Chinese Computational and Cognitive Neuroscience Conference

2023.6
✓ **CT image segmentation of key organs for nasopharyngeal cancer radiation therapy** – Annual Project Demonstration of Southern University of Science and Technology

⟫⟫⟫ Skills

✓ Excellent programming ability based on languages, including Python, MATLAB, C++, and Java.
✓ Machine learning
  ✓ Knowledge about machine learning models, deep learning models, especially the recurrent neural networks (RNNs), spiking neural networks (SNNs) and transfer learning models.
✓ Neural imaging principles and programming analysis:
  ✓ EEG (Electroencephalogram) signal analysis based on software MNE, including source estimation, frequency analysis and functional connectivity.
  ✓ Basic MRI (Magnetic Resonance Imaging) signal analysis based on software Freesurfer.
✓ Text editing language, including Latex.