

---

## EDUCATIONAL BACKGROUND

### Southeast University (SEU)

B.Eng in **Biomedical Engineering**

GPA: **3.5**/4.0 | Average Score: **87**/100 | Major GPA: **3.73**/4.0

Nanjing, CHN

Sep. 2019 – Jun. 2023

---

## RESEARCH EXPERIENCES

### Research on treatment efficacy in patients with Parkinson's disease using resting state fMRI brain network connectivity

Nanjing, CHN

*Bachelor's Degree Thesis, Advisor: Prof. Yu S.*

Nov. 2022 – Present

- Preprocessed fMRI data utilizing DPABI and SPM12 toolbox in MATLAB
- Identified patients' intrinsic connectivity networks and calculated static and dynamic functional network connectivity using GIFT toolbox in MATLAB
- Did statistical analyses between groups (eg. PD-on, PD-off, healthy controls, levodopa weak responders, levodopa strong responders) based on static and dynamic functional network connectivity
- Trained machine learning model to predict treatment efficacy in patients with Parkinson's disease (UPDRS-III-change)
- Did correlation analysis between functional network connectivity properties of patients with Parkinson's disease and their UPDRS-III scores

### Application of Advanced Sequences of Magnetic Resonance in the Classification and Segmentation of Brain Tumors in Children as an Aid to Diagnosis

Nanjing, CHN

*Main Participant, Advisor: Prof. Yu S.*

Feb. 2022 – May. 2022

- Utilized multi-modality MRI technology, brain tumor pathology, signal processing and artificial intelligence technology to create a system for segmentation and classification of pediatric brain tumors based on advanced MRI sequences aiming to assist diagnosis and provide clinicians with intelligent diagnostic services
- Applied PyRadiomics toolkit to extract the imaging histology features of multimodal MRI image datasets, and used machine learning in the scikit-learn toolkit for feature filtering and classification
- Built the U-Net based network for the brain tumor segmentation part, trained new members, and handed it over to them for the subsequent improvement
- Developed a user interface through self-studying PySide2 and connect it with the back-end project

### Modulation of Neural and Physiological Signals by Soothing Music

Nanjing, CHN

*Independent Research, Advisor: Prof. Xingran C.*

Apr. 2022 – Jun. 2022

- Collected and analyzed physiological signals in real time during music listening, quantified the neutral tension states, and studied the emotional "deep breathing" process of accumulating and releasing stress states
- Pre-processed EEG signal via EEGLAB toolbox in MATLAB and designed a Butterworth filter in MATLAB to filter the EEG signal to the band of interest and plot the EEG signal
- Analyzed the EEG power density spectra at different music listening statuses and the power share of each band, explored the effect of soothing music on neural and physiological signals, and wrote a paper

### Design of Blood Oxygen Saturation Detection System

Nanjing, CHN

*Group Leader, Advisor: Ir. Lei H.*

Sep. 2021 – Dec. 2021

- Synthesized the knowledge of analog, digital and virtual instruments for the implementation of the function of blood oxygen signal measurement
- Converted blood oxygen signal into voltage signal using Lambert Beer's Law, pre-processed voltage signal in analog section of the system
- Further processed the voltage signal in digital section of the system, calculated blood oxygen saturation and showed PPG wave in digital section using LabVIEW, and operated the switching output of red and infrared light in LabVIEW

- Created a system to measure the user's blood oxygen saturation and show one's PPG wave in real time

### **Ultrasonic Microbubble Intelligent Tracing**

Nanjing, CHN

*Main Participant, Advisor: Prof. Guangquan Z.*

Oct. 2020 – Oct. 2021

- Aimed to combine ultrasound beam synthesis imaging algorithm approach and deep learning network based on heatmap regression to accomplish microbubble localization task in vascular ultrasound images
- Self-learned deep learning, and built Spatial Configuration-Net (SCN) which is a modified heatmap regression based CNNs in PyTorch environment
- Calibrated the label data of the simulation dataset, trained the SCN and U-Net, compared their localization effects and adjusted the parameters, added pre-processing and post-processing techniques to improve the performance

## **INTERNSHIP EXPERIENCE**

### **Institute of Neuroscience, Chinese Academy of Sciences Center for Excellence in Brain Science and Intelligence Technology, Chinese Academy of Sciences**

Shanghai, CHN

Atypical functional gradient of cerebellum in autism and its association with genetic profiles

*Independent Research, Advisor: Dr. Yafeng Z. & Prof. Cironq L.*

Sep. 2022 – Present

- Compared the brain imaging data of both autistic patients and healthy controls, and figured out the differences in cerebellar
- Used MATLAB and its toolboxes(eg.SPM12) to process the cerebellum template and fMRI data, compute cerebellar connectome gradients in autistic and healthy individuals and analyze the differences between these two groups via statistical methods in both whole cerebellum level and seven subdivisions of the cerebellum
- Preprocessed AHBA transcriptome dataset
- Analyze the association between ASD-related gradient differences and gene expression via partial least squares (PLS) regression analysis and gene enrichment analysis
- Did correlation analysis between ASD-related gradient of autistic patients and their ADOS scores
- Visualized the results of computation and analysis
- Discovered that there are some statistically significant differences in the cerebellar connectome gradients between autistic patients and healthy controls and found the linkage between atypical gradient and gene expression profiles

### Assistant - Translational Brain Imaging Research Group

Jul. 2022 – Sep. 2022

- Conducted the mouse/marmoset/macaque spatial transcriptome image half-brain slice and structural image MRI data registration, and followed up experimental data hippocampal functional partitioning registration
- Pre-processed the histological slices and template, debugged MATLAB code to map histological slice sequences to atlas without 3D reconstruction, and used ANTs to do linear registration for both structural image and the hippocampal functional partition

## **EXTRACURRICULAR ACTIVITY**

### **Student Union - School of Information Science and Engineering (SEU)**

Nanjing, CHN

*Director - Publicity Department*

Sep. 2019 – Jun. 2021

- Designed the covers of WeChat articles of the official social media account, drafted posts of activities in the school, and promoted the upcoming activities
- Arranged diverse events and designed posts for Student Union Annual Ball, College Education Support Team recruitment, Orientation Camp, and College Sports Day

## **HONORS & AWARDS**

Scholarship - "Human Anatomy & Physiology" Course(TOP 5%)	Oct. 2022
2022 Merit Student of SEU(10/120)	Sep. 2022
Third Prize in the Jiangsu Biomedical Engineering Competition	May. 2022
Scholarship - "Fundamentals of Electronic Circuits" Course(TOP 5%)	Oct. 2021
Third Prize in the SEU Structure Contest (TOP 30%)	Mar. 2021

## SKILLS

---

**Languages:** Chinese (Native), English (Proficient)

**Computer Skills:** C++, MATLAB, Python, R, Linux, LaTeX, LabVIEW, ANTs, ITK-SNAP, Mango, PsychoPy, Multisim, Quartus II, OpenSim, Photoshop, DaVinci Resolve