

YANGYI LUO

✉ rivero@hnu.edu.cn | ✉ lyy.river@gmail.com | ☎ (+86) 19119281624 |

🎓 EDUCATION

Hunan University

Aug. 2021 – Jul. 2025

B.S. in Statistics, expected June 2025

- GPA: 3.6 / 4.0 (A- grade)
- Relevant modules: neurology: 90; Statistical software: 92; Statistical calculation: 95 ;

Changjun High School of Changsha

Aug. 2018 – Jun. 2021

🧑‍🔬 RESEARCH EXPERIENCE

MRI-Based Diagnostic Classification and Brain Connectivity Analysis

Jan. 2025 – Present

Freesurfer, Brain Network Analysis, Docker, Linux Individual Research Project

Performing structural MRI data analysis and brain network modeling for individual-level diagnostic classification.

- Gained proficiency in Linux systems and server-based computing, enabling efficient operation and resource management for large-scale neuroimaging workflows.
- Preprocessed structural MRI data using Freesurfer, including skull stripping, cortical surface reconstruction, and anatomical parcellation to ensure high-quality structural metrics.
- Built standardized, reproducible computational environments with Docker, ensuring consistency in software dependencies and improving team collaboration.
- Constructed brain morphological similarity networks from MRI data to investigate individual differences by computing both structural and functional connectivity between brain regions.

EEG + EMG Hand Gesture Classification

Dec. 2024 – Mar. 2025

Signal Processing, Deep Learning, Brain-Computer Interface Individual Research Project

Conducted multimodal signal analysis for hand gesture classification by integrating EEG and EMG signals.

- Independently designed the experimental protocol and implemented synchronous EEG–EMG acquisition during hand gesture tasks.
- Preprocessed and extracted features (time–frequency for EEG, time/frequency domain for EMG), with modality alignment for fusion.
- Built and evaluated models including SVM, Random Forest, CatBoost, CNN, and Transformer; demonstrated that multimodal fusion significantly improved classification accuracy and robustness.
- Proposed a low-cost wearable BCI concept using a wristband–forehead band system, highlighting applications in human–computer interaction and motor rehabilitation.

Top 10% in Kaggle: Stacking Model Competition

Aug. 2024 – Sep. 2024

LightGBM, XGBoost, EfficientNet Individual Projects

Designed and implemented a machine learning pipeline to utilize image and tabular data for meta-classification.

- Explored two methods: one combining multiple ImageNet models with LightGBM, the other utilizing EfficientNet with stacked models (LightGBM, XGBoost, and CatBoost).
- Conducted 100 extensive experiments, optimizing model parameters and sampling strategies.
- Achieved significant improvement in prediction accuracy and stability, earning a bronze medal in the Kaggle competition and ranking in the top 10%.

🧑‍💼 INTERNSHIP

Peking University Changsha Institute for Computing and Digital Economy

Apr. 2025 – Jul. 2025

Algorithm Research Intern, Brain-Computer Intelligence and Applied Statistics Center Changsha, China

Worked on SEEG-based epileptogenic zone localization and connectivity modeling, integrating signal processing, statistical modeling, and brain network analysis.

- Participated in SEEG-based epileptogenic zone localization and brain network modeling, using Epileptogenicity Index (EI) to screen key nodes, and combining MVAR and DTF methods to analyze epileptogenic zones and signal propagation patterns; clustered brain regions to identify functional roles (origin, termination, transmission, irrelevant) and visualized DTF/PDC adjacency matrices and propagation networks to explore spatiotemporal seizure dynamics.
- Conducted statistical validation of the method and implemented the complete analysis pipeline in Python, including data preprocessing, brain network modeling, and result visualization; packaged the workflow into a reusable Python library to ensure code standardization and reproducibility.

⚙️ SKILLS

- **Programming Languages:** Python (proficient), R (proficient), MATLAB (basic), \LaTeX , SQL, Shell scripting / Linux
- **Algorithms and Models:** Bayesian inference, PCA, reinforcement learning, ARIMA, k-means clustering, Fourier Transform, wavelet Transform
- **Tools and Frameworks:** PyTorch, scikit-learn, Matplotlib
- **Languages:** Mandarin - Native speaker, English (IELTS 6.5) and Russian
- **Neuroscience Signal Processing:** EEG, EMG, SEEG, sMRI preprocessing; feature extraction; brain network analysis; BCI experimental design

📌 MISCELLANEOUS

- **Hobbies:** Astronomy, outdoor activities, handicrafts, and exploring plants and animals
- **Personal Attributes:** Highly curious and quick learner with a proactive, adaptable mindset; strong problem-solving abilities and a persistent approach to challenges; passionate about life, nature, and exploring new experiences.