Jiafeng Liao

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EDUCATION

University of Chinese Academy of Sciences Beijing, China

Withdrew in School of Future School *Sep 2021 − Jun 2023*

Research area: Data Science in neural signals

Huazhong University of Science and Technology WuHan, China

*Bachelor's degree of Engineering in Bioinformatics;***rank: 1/22, GPA: 3.81/4** *Sep 2017 − Jun 2021*

Outstanding Undergraduate in Terms of Academics(top 1%)

CORE COURSES

Machine Learning: Machine learning, Data Mining, Biostatistics, Numerical Analysis, Matrix Analysis and Applications, Mathematics Foundation in Artificial Intelligence(Matrix Analysis & Optimization), Affective Computing

Computation: Data Structure and Algorithms, Computer Algorithm and Program Design, Perl & Python in visualization, Quantitative Physiology, Bioinformatics, Database Technology & Application

Biology: Molecular Biology, Biochemistry, Anatomical Physiology, Cell Biology, Genomics, Proteomics

SKILLS

Languages: C/C++, Python, Go, JavaScript, SQL,MATLAB, R

Technologies: MySQL, Git, Docker, PyTorch, Tex

Methodologies: OOP, Functional Programming

EXPERIENCE

Huazhong University of Science and Technology WuHan, China

Protein Binding affinity *Aug 2020 − Nov 2020*

- Study of how proteins bind via structural complementarity

- Collected and organized the data where protein pairs bind together, such as temperature, binding affinity

University of Chinese Academy of Sciences Beijing, China

Decoding algorithms of Brain-Machine Interface *Nov 2022 − May 2023*

- Decoding hand velocity and position of macaque from neural activity of M1

- Programming and comparing different algorithms: PVA,Wiener Filter,Kalman Filter,ReFIT-Kalman Filter,PSID in decoding kinematics parameters of macaque.

- Dynamics in motor control. (1) Projecting neural data of different tasks into different orthogonal subspaces using dimension reduction. (2) Found neural trajectories in brain data subspaces consistent with external physical spaces(hand). (3) Found neural data projected into different orthogonal subspaces has different moving direction preference

City University of HongKong Hongkong, China

Protein structure alignment *Jan 2024− Feb 2024*

- Learned the mechanisms of antigens triggering autoimmunity, such as molecular mimicry

- Calculate structural similarity between defined protein pairs using deep learning algorithms, such as DeepBLAST

Awards & Achievements

Academic Scholarship Awarded to PhD students who condut academic research by Chinese Academy of Sciences. (Nov 2021 & Nov 2022)

Outstanding Undergraduate Graduates Awarded to students who have excellent performance in study by Huazhong University of Science and Technology. (Jun 2021)

Outstanding Undergraduate in Terms of Academics(top 1%), Awarded to students who rank top 1 and perform best in academic research by Huazhong University of Science and Technology. (Nov 2019)

National Endeavor Scholarship Awarded to students who rank top 10% in study by Huazhong University of Science and Technology.(Nov 2020) **Science and technology innovation scholarship**Awarded to students who have dedication in research by Huazhong University of Science and Technology.(Oct 2018, Oct 2019)

Academic Excellence Scholarship Awarded to students who rank top 1 in class by Huazhong University of Science and Technology.(Oct 2019, Oct 2020)

Self improvement scholarship Awarded to students who perform well while overcoming difficulties from health or home. Oct 2018

Projects

Predication of gene structure using Bayesian Network | *GitHub*

- A Python project which implements a variety of string and matrix processing operations that learn conditional possibility distribution from dependency among bases of DNA seq.

BMI decoding benchmarking |

- A Python project in which we benchmarked many algorithms on public datasets of neural signals, like PVA, wiener filter, kalman filter, refit-kalman filter.

Protein alignments using DL |

- A Python pipeline and benchmark of calculating protein structural similarity using DL algorithms. It contains: create environment on cpu/gpu, build embedding vector database from CATH and Swissmodel databases, protein alignment using DeepBlast.

Pipeline of PSTH |

- A Python pipeline in which we can generate psth plots from raw neural data with different data structures.