PENGYANG XIE

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EDUCATION

Imperial College London London, UK
MRes in Artificial Intelligence and Machine Learning Oct 2022 -

Supervisor: Dr Yingzhen Li
Research Project: Is self-supervised learning at odds with unsupervised learning?
Selected Courses: Mathematics for Machine Learning (70015, 2022 Autumn), Reinforcement Learning (70028, 2022 Autumn), Complexity (70005, 2022 Autumn), Python Programming (70053, 2022 Autumn), Ethics, Privacy, AI in Society (70052, 2022 Autumn)

Beihang University Beijing, China
B.Eng. in Computer Science (Major) GPA: 3.71/4.00 June 2022

Thesis: Domain Adaptation Dynamic Graph Convolutional Networks Based Schizophrenia Identification
Selected Courses: Mathematical Analysis, Advanced Algebra, Discrete Mathematics, Data Structures and Programming, Principles of Computer Organization, Operating Systems, Object-oriented Design and Construction, Compiler Technology, Principles of Database Systems, Algorithm Design and Analysis, Computer Network, Software engineering.

B.S. in Applied Mathematics (Minor) June 2022

Selected Courses: Operations Research, Matrix Analysis, Mathematical Statistics, Mathematical Modeling, Ordinary Differential Equation, Computational Science and Engineering, Numerical Analysis, Abstract Algebra.

PUBLICATION

Deep-learning-based EEG Processing Technology and Frontier Applications
Pengyang Xie*, *Lianghui Guo, Yang Li*
Chinese Journal of Stereology and Image Analysis, 2021(01), **Cover Paper**
This paper introduces the processing technology of electroencephalography (EEG) based on deep learning and the cutting-edge applications of EEG signals in the fields of computer vision and brain-computer interfaces.

- Reviewed over 70 papers on computer vision approaches driven by brain signals, BCI for stroke rehabilitation, and processed electroencephalography (EEG) based on deep learning. Implemented methods, extracted trends, and highlighted intriguing approaches in the literature to inform future research and formulate recommendations.

RESEARCH EXPERIENCES

Summer Research Intern July 2021 – September 2021
Advisor: Prof. Min Xu Institute of Neuroscience, Chinese Academy of Sciences

- Analyzed widefield calcium imaging data of murine models using seqCNMF, PCA, ICA, and other algorithms and extracted spatiotemporal characteristics.
- Analyzed functional connectivity of cerebral ROIs, facial movement, and pupil characteristics during different sleep stages and air-puff stimuli.

Research Intern February 2021 – August 2021
Advisor: Prof. Yiqiang Chen Institute of Computing Technology, Chinese Academy of Sciences

- Participated in the related work of multimodal collaborative representation. Based on five multimodal data of vision, hearing, haptic feedback, EMG, and pose, designed an online algorithm to prove that multimodal data has higher reliability than single-modal data in judging human behaviour.

- Implemented a multi-functional recognition system based on multimodal collaborative representation. When the single-modal data is missing or damaged, the multimodal data can help make an accurate judgment.

Natural Language Processing Intern October 2019 – October 2020
Advisor: Prof. Richong Zhang Innovation Center for Big Data and Brain Computing, Beihang University

- Participated in the journal extension for Syntax Encoding with Application in Authorship Attribution, which proposed a novel strategy to encode the syntax parse tree of a sentence into a learnable distributed representation.
- Independently reproduced the experimental results of the paper on my personal computer without source code in PyTorch.

PROJECT EXPERIENCES

A4 Paper Method Based English Words Memory Website April 2021 – July 2021
Advisor: Prof. Jie Luo School of Computer Science and Engineering, Beihang University

- Developed an English vocabulary learning and memory website, JQKey, based on the A4 Paper method, which connects the vocabulary with a specific scene on an A4 size paper or screen called Word Map. Designed algorithms that recommended new words intelligently and built an online community for sharing their Word Maps with nearly 1000 users. website access via: https://jqkey.xyz/
- Used *Vue*, *echarts*, and *fabrics* to realize the Word Map function and the user's page and used JavaScript to realize the animation.

A compiler for the C0 programming language September 2020 – December 2020
Advisor: Prof. Xiaohua Shi School of Computer Science and Engineering, Beihang University

- Implemented a compiler supporting error handling for generating MIPS assembly code according to a given C0 grammar. It supports register allocation and some optimization mechanisms, including copy propagation, simplification of multiplication and division, and modification of for-statement and while-statement.
- Project URL: https://github.com/Mokoghost/BUAA_Compiler2020

Cloud Computing Based Personal Deep Learning Platform January 2020 – July 2020
Advisor: Prof. Hailong Yang Sino-German Joint Software Institute (JSI), Beihang University

- Developed an online high-throughput computing platform for deep learning based on HTCondor, a job scheduler. It utilizes computing resources rented from the Alibaba cloud. The platform encapsulates the process of creating and terminating computing instances, job operation, and feedback and refines the computing cost to a single task through a bidding strategy.

AWARDS

Best Bachelor's Thesis Award (4%)	2022
Second Prize in Beijing Contest District in China Undergraduate Mathematical Contest in Modeling	2020
The Second Prize of the Feng Ru Cup of Beihang University	2019

TECHNICAL SKILLS

Languages: (Skillful) C, C++, Java, Python, MATLAB, JavaScript, MIPS Assembly Language, Verilog HDL, (Familiar) SQL, C#, X86 Assembly Language

Machine Learning Frameworks: PyTorch, TensorFlow

Platforms & Technologies: Linux, MySQL, ROS, Unity, Psychtoolbox, Vue

English Proficiency: GRE: Verbal 157, Quantitative 167; IELTS 7.0; TOEFL 105