

HAOYU LU

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🎓 EDUCATION

Beijing Normal University, China 09/2020 – 06/2024

B.S. in Computer Science and Technology, School of Artificial Intelligence

GPA: 3.8/4.0 **Rank:** 5/53

Thesis title: High-quality 3D Image Reconstruction from Low-dose PET Image Based on Diffusion Model

University of Melbourne, Australia 10/2024 – present

Ph.D. Student in Biomedical Engineering, Faculty of Engineering and IT

Advised by: Prof. Leigh Johnston, Dr. Catherine Davey

Proposed thesis title: Physics Informed AI-based PET Image Reconstruction

👤 EXPERIENCE

Key Laboratory of Beam Technology of Ministry of Education,
Beijing Normal University 09/2022 – 06/2024

Research Assistant Advised by: Prof. Jianyong Jiang

- Explored the combination of computer science and medical imaging techniques, especially in fields of Positron Emission Tomography (PET) and Compton imaging
- Implemented models for medical image classification and segmentation from U-net to recent SAM, having gained insights into both the imaging principle and related downstream tasks
- Worked on physics-based imaging correction using methods of deep learning and solutions to inverse problems with explainable AI

Natural Hazards Remote Sensing Lab, Peking University 04/2023 – 10/2023

Research Assistant Advised by: Prof. Xie Hu

- Project **Domain Adaptive Semantic Segmentation of Multi-annual Retrogressive Thaw Slumps** (*paper under review*) was chosen as one of the 2023 Emerging Engineering Interdisciplinary Projects, Peking University, co-advised by Prof. Xie Hu and Prof. Shanghang Zhang
 - Implemented Deeplab V3+ segmentation model integrated with gradient reversal layer and domain discriminator for domain adaptation
 - Achieved an F1 score of 0.829 and a recall rate of 0.934, outperforming CycleGAN and fine-tuning
- Worked on fine-tuning Segment Anything Model (SAM) for segmentation tasks in remote sensing images

Cannabis “Vaccine”, Beijing Normal University 02/2022 – 11/2022

Leader of Modelling Group International Genetically Engineered Machine Competition

- Established mathematical models to describe the system of biochemical reactions of Cannabis “Vaccine” based on differential equations, stochastic process and biochemical kinetics, etc.
- Implemented the models and simulated to explore the feasibility and efficiency of our biological pathway
- Discussed with wet-lab fellows to improve experiment design according to simulation results

Stress Detection Platform Based on Heart Rate Variability,
Beijing Normal University 06/2021 – 05/2022

Project Participant Advised by: Prof. Hua Huang

- Chosen as one of 2021 Beijing Undergraduate Research and Innovation Projects
- Implemented denoising and smoothing algorithms to preprocess Photoplethysmography (PPG) signals sampled from a custom wristband, and calculated parameters related to HRV level in time and frequency domain
- Implemented deep learning based classification algorithm on preprocessed, labeled data, achieving great accuracy of 96.48%

PUBLICATIONS

- Jiang, Jianyong, Jianlang Hua, Haihao Wang, Ziquan Yuan, Yuan Meng, **Haoyu Lu**, Steven Liu, Yunlai Chen, and Yuan-Chuan Tai. “A virtual-pinhole PET device for improving contrast recovery and enhancing lesion detectability of a one-meter-long PET scanner: a simulation study.” *Physics in Medicine and Biology* (2023).
- Yuan, Ziquan, Fenglin Zhan, **Haoyu Lu**, Chenxi Li, Yucun Hou, Haihao Wang, Jianlang Hua, Runze Liao, and Jianyong Jiang. “QUANTOF: multi-GPU-based list-mode fully quantitative TOF PET image reconstruction. ” *IEEE Nuclear Science Symposium (NSS), Medical Imaging Conference (MIC) and Room Temperature Semiconductor Detector Conference (RTSD)* (2024).

In Press

Lin, Yiling, Xie Hu, **Haoyu Lu**, Fujun Niu, Gengnian Liu, Lingcao Huang, Shanghang Zhang, Fujun Niu, Jifu Liu and Yunhuai Liu. “Multi-annual Inventorying of Retrogressive Thaw Slumps Using Domain Adaptation.” *Journal of Geophysical Research: Machine Learning and Computation* (2024).

HONORS AND AWARDS

<i>Melbourne Research Scholarship</i> , University of Melbourne	03/2024
<i>Silver Medal</i> , Internationally Genetically Engineered Machine Competition (Modelling)	11/2022
<i>1st Prize Scholarship</i> (10%), Beijing Normal University	10/2021, 10/2022
<i>1st Prize</i> , National English Contest for College Students	10/2022
<i>Excellent Student Cadre</i> , Beijing Normal University	10/2022
<i>2nd Prize</i> , Beijing College Students’ ‘Internet+’ Innovation and Entrepreneurship Competition	08/2022
<i>Honorable Mention</i> , Interdisciplinary Contest In Modelling	05/2022
<i>Merit Student</i> , Beijing Normal University	10/2021

ACTIVITIES

Academic Contest Department,

School of Artificial Intelligence, Beijing Normal University

07/2021 – 07/2022

Leader

- Helped organize various school-level contests and academic events
- Hosted seminars with veteran engineers in industry, prestigious professors and high-level contestants in related competitions like ACM-ICPC
- Organized interesting, rewarding activities aiming at promoting professional growth, e.g., daily coding

SKILLS

Programming: proficient in

- Programming languages: C/C++, Python and MATLAB
- Deep learning frameworks: PyTorch and TensorFlow
- Development environment configuration on Linux platforms

Languages:

- English - Fluent
 - TOEFL: 108 (reading 29, listening 26, speaking 26, writing 27)
 - GRE: 327+3.5 (verbal 158/170, quantitative 169/170, writing 3.5)
 - CET-6: 605
- Mandarin - Native