Yu Yujia

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EDUCATION

Beijing Normal-Hong Kong Baptist University **09/2024 – Present**

- **Major:** Computer Science and Technology(MPhil)
- **GPA:** 3.78/4
- **Core Courses:** *Artificial Intelligence(A), Deep Learning for Computer Vision(A)*

Guangzhou University **09/2020 – 07/2024**

- **Major:** Robot Engineering(BE)
- **GPA:** 91/100 **Rank:** 1/80
- **Core Courses:** *Artificial Neural Network Technology(95), Introduction to Machine Learning(96), Fundamentals Of Machine Vision(92), Modeling and Simulation of Robot System(94), Solidworks 3D Solid Modeling Technology(96)*

RESEARCH INTERESTS

- Video Understanding, Multimodal Learning, Computer Vision, Medical Image Processing

PUBLICATION

- **Yu, Y.**, Shi, H., & Qu, B.* (2025). MomentMamba: Efficient Collaborative State Space Decoding for Video Moment Retrieval and Highlight Detection. (under review).
- Huang, W.*, **Yu, Y.**, Xu, H., Su, Z., & Wu, Y. (2023). Hyperbolic Music Transformer for Structured Music Generation. IEEE Access, 11, 26893-26905.
- Huang, W.*, Xu, H., & **Yu, Y.** (2023). MRP-Net: Seizure detection method based on modified recurrence plot and additive attention convolution neural network. Biomed. Signal Process. Control., 86, 105165.
- Xu, H., Wu, J., **Yu, Y.**, Huang, W.*, & Ni, J.* (2024). Occult lymph node metastasis prediction in non-small cell lung cancer based self-supervised pretrained and hyperbolic theory. Appl. Soft Comput., 164, 111949.

RESEARCH EXPERIENCE

Project: MomentMamba: Efficient Collaborative State Space Decoding for Video Moment Retrieval and Highlight Detection **09/2024 – 08/2025**

Project Leader | Supervisor: Dr. Bingqing Qu

- Designed the **MomentMamba framework**, integrating an **Optimal Transport (OT)-based alignment** for local semantic correspondence and a **Collaborative Mamba module** for cross-modal temporal reasoning via shared state transitions.
- Achieved **state-of-the-art** results on QVHighlights, TVSum, and Charades-STA benchmarks, improving mean Average Precision and Recall @0.5 by 3-6% over baselines.
- The work is currently under review for publication at an international conference(CCF-B).

Project: Occult Lymph Node Metastasis Prediction in Non-small Cell Lung Cancer Based Self-supervised Pretrained and Hyperbolic Theory **06/2022 – 04/2023**

Project Leader | Supervisor: Dr. Wenkai Huang

- Targeted the challenge of insufficient labeled CT data for predicting occult lymph node metastasis (OLNM) in NSCLC patients.
- Built a **two-stage OLNM-Net** framework: self-supervised Masked Convolutional Autoencoder (MCAE) for pretraining and **Hyperbolic Prototype Embedding Network (HPENet)** for few-shot metric learning.
- Demonstrated superior prediction performance and data-efficiency over supervised models, establishing a generalizable paradigm for hyperbolic representation learning in medical imaging.

- Published in *Applied Soft Computing* (IF: 6.6).

Project: Hyperbolic Music Transformer for Structured Music Generation **03/2022 – 03/2023**

Project Leader | Supervisor: Dr. Wenkai Huang

- Proposed a **Hyperbolic Music Transformer** to model hierarchical dependencies in symbolic music beyond Euclidean representations.
- Designed a **Hyperbolic Attention Mechanism** based on Hyperboloid and Klein models to capture long-range dependencies and hierarchical relations within symbolic music.
- Outperformed Euclidean models by **8%** on average across objective metrics (Information Rate, Pitch Count, Pitch Range) and subjective evaluations.
- Published in *IEEE Access* (IF: 3.6).

Project: MRP-Net: Seizure Detection Method Based on Modified Recurrence Plot and Additive Attention Convolution Neural Network **05/2021 – 05/2022**

Principal Researcher | Supervisor: Dr. Wenkai Huang

- Addressed the problem of **poor feature discrimination in EEG-based seizure detection** caused by nonlinear temporal dynamics.
- Demonstrated the effectiveness of phase-space reconstruction and attention mechanisms for nonlinear biomedical signal analysis.
- Achieved **99.77% sensitivity, 99.57% specificity**, and **99.69% accuracy o**n the Bonn and SWEC-ETHZ EEG datasets, surpassing state-of-the-art approaches by >4%.
- Published in *Biomedical Signal Processing and Control* (IF: 4.9).

TEACHING ASSISTANTSHIP

Course: Basic Programming For Data Science (Fall 2024, Fall 2025)

- Assisted in teaching Python fundamentals, data manipulation, and algorithmic thinking for undergraduate students majoring in data science.
- Provided in-class explanations and after-class Q&A sessions to help students understand key programming concepts.

Course: AI for Digital Media (Spring 2025)

- Supported instruction in topics including machine learning, computer vision, and AI-based content generation.
- Graded assignments and quizzes, offering feedback to support students' improvement in coding practices.

HONORS AND AWARDS

- National Scholarship (Top 1%), Ministry of Education of China, 2023
- First-Class Scholarship (Top 8%), Guangzhou University, 2021
- Outstanding Student (Top 8%), Guangzhou University, 2021-2024
- Second-Class Scholarship, Guangzhou University, 2022, 2024
- Excellent Student Cadre, Guangzhou University, 2022

SOFTWARE & LANGUAGE SKILLS

- Python, C,HTML,Markdown, LaTeX
- Pycharm, VS Code, Matlab, SolidWorks, Proteus, Labview