

Yexin Liu

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EDUCATION

The Hong Kong University of Science and Technology (Guangzhou)	Guangzhou, China
• Mphil., AI Thrust	Sep.2022-Jun.2024(expected)
GPA: 3.75/4	
Hunan University (985)	Hunan, China
• M.Eng., Mechanical Engineering	Sep.2019-Jun.2022
GPA: 88.5/100	Top: 8% (8/102)
Related Courses: Engineering Mathematics (96), Intelligent control theory and application (95)	
Hunan University of Science and Technology	Hunan, China
• Bachelor, Mechanical Design, Manufacture And Automation	Sep.2015-Jun.2019
GPA: 3.59/4	Top: 3% (3/107)
Related Courses: Advanced Mathematics (100), Probability Theory and Mathematical Statistics (99)	

RESEARCH INTEREST

- **Multi-modal language model, Computer vision, Bioimage Processing, Virtual try-on, UDA, 360 panoramic images**

INTERN

Offline: Data-centric vision-language model pretraining	Jan.2024- May.2024 (expected)
Supervisor: Bo Zhao	Institute: Beijing Academy of Artificial Intelligence
• Data-centric approaches for Multi-modal language model.	
Remote: Medical multi-modal model pretraining	Jan.2024- Apr.2024 (expected)
Supervisor: Mingguang He	Institute: The Hong Kong Polytechnic University
• Preprocess the medical multi-modal data.	
• Pretrain the VLM.	
Offline: AI-based Fashion-design	Dec.2023- Jan.2024
Supervisor: Yijie Peng	Institute: Peking University
• Design the workflow of the design system.	
• Construct the AI agents for garment design.	

PUBLICATIONS / PATENTS

- Yexin Liu, Xiaolan Chen, Weiyi Zhang, Mingguang he, Lin Wang, Danli Shi. EyeBlend: A Multimodal Large Language Model for Ophthalmology (Under Review MICCAI 2024)
- He, Muiyang* and **Liu, Yexin*** and Wu, Boya* and Yuan, Jianhao and Wang, Yueze and Huang, Tiejun and Zhao, Bo. Efficient Multimodal Learning from Data-centric Perspective. arXiv:2402.11530. (<https://github.com/BAAI-DCAI/Bunny>).
- Weiming Zhang, **Yexin Liu**, Zheng X, Lin Wang. SAM is a Good Teacher: Towards Distortion-aware Unsupervised 360° Image Semantic Segmentation. **CVPR 2024**
- Xu Zheng, Jingjin Zhu, **Yexin Liu**, Zidong Cao, Chong Fu, Lin Wang. Both Style and Distortion Matter: Dual-Path Unsupervised Domain Adaptation for Panoramic Semantic Segmentation. **CVPR. 2023: 1285-1295.**
- **Yexin Liu**, Jian Zhou, Lizhu Liu, Zhengjia Zhan, Yueqiang Hu, Yongqing Fu, Huigao Duan. FCP-Net: A Feature-Compression-Pyramid Network Guided by Game-Theoretic Interactions for Medical Image

Segmentation. *IEEE TMI*, 2022

- **Yexin Liu**, Weiming Zhang, Guoyang Zhao, Jingjin Zhu, Lin Wang. Night-TTA: Test-Time Adaptation for Nighttime RGB-T Semantic Segmentation. *IEEE Transactions on Artificial Intelligence*, 2023.
- Lizhu Liu*, **Yexin Liu***, Jian Zhou, Chen Guo, Hui Zhang, Huigao Duan. A novel MCF-Net: Multi-level context fusion network for 2D medical image segmentation. *Computer Methods and Programs in Biomedicine*, 2022, 226: 107160.
- Xu Zheng*, **Yexin Liu***, Yunfan Lu, Tongyan Hua, Tianbo, Pan, Weiming Zhang, Dacheng Tao, Lin Wang. Deep learning for event-based vision: A comprehensive survey and benchmarks. (*TPAMI Under Review*, 2023).
- **Yexin Liu**, Shuai Zou, Zeyu Wang, Lin Wang. MYCloth: Towards Intelligent and Interactive Online T-Shirt Customization based on User’s Preference. (**Under Review CHI**, 2023)
- **Yexin Liu**, Weiming Zhang, Lin Wang. PRAISE: Unsupervised Visible-Infrared ReID via Pseudo-label Correction and Modality-level Alignment. (**Under Review RAL**)
- Jian Zhou, **Yexin Liu**, Huigao Duan. A skin lesion image segmentation method based on deep learning: China, 202110769832.X [P].2021 (**Chinese invention patent**)
- Jian Zhou, **Yexin Liu**, Huigao Duan, Yi Liu, Yiping Shen. A method, device and computer readable storage medium for medical image segmentation: China, 2021111474961.2 [P].2021 (**Chinese invention patent**)

RESEARCH EXPERIENCES

Interactive Human-Centered Text to 360° Panorama Generation

Sep.2023- Oct.2023

Supervisor: Lin Wang **Institute: The Hong Kong University of Science and Technology (Guangzhou)**

- Designed the Human-360° image fusion steps.
- Conducted user study.
- A paper is under review (IEEE VR).

T-Shirt Customization

July.2023- Sep.2023

Supervisor: Lin Wang **Institute: The Hong Kong University of Science and Technology (Guangzhou)**

- Developed a T-Shirt Customization system. Users can generate personalized T-shirt based on this system.
- Designed a 2D virtual try-on method.
- Conducted a user study.
- A paper is under review (CHI).

Unsupervised 360° Image Semantic Segmentation

June.2023- Sep.2023

Supervisor: Lin Wang **Institute: The Hong Kong University of Science and Technology (Guangzhou)**

- Designed a SAM and segformer fusion method.
- Write the introduction, related works, and the method.

A paper is under review (CVPR).

Unsupervised Visible-Infrared ReID

Mar.2023- May.2023

Supervisor: Lin Wang **Institute: The Hong Kong University of Science and Technology (Guangzhou)**

- Proposed a new fully unsupervised method for Visible-Infrared person re-identification.
- Supplied with a theoretical insight about cross modal alignment
- A paper is under review.

Event camera survey

Nov.2022- Mar.2023

Supervisor: Lin Wang **Institute: The Hong Kong University of Science and Technology (Guangzhou)**

- Written a survey as a first co-author
- A paper is under review (TPAMI).

Test-Time Adaptation for Nighttime RGB-T Semantic Segmentation

Oct.2022-Nov.2022

Supervisor: Lin Wang Institute: The Hong Kong University of Science and Technology (Guangzhou)

- Proposed a new test-time adaptation framework for enhancing the cross-modal segmentation performance during nighttime.
- A paper is accepted (TAI).

Medical image segmentation based on multi task interaction Oct.2020-Aug.2021

Supervisor: Jian Zhou, Huigao Duan Professor (Outstanding Young Scientist), Institute: Hunan University

- Proposed a new multi-task interaction learning strategy and a hybrid loss function for exploring the potential benefits of the classification information task to the segmentation task.
- Designed several modules to effectively capture context information, fuse multi-scale features, adaptively recalibrate the attention weights and explore the complementariness between attention mechanisms and residual blocks.
- Developed a medical image segmentation model and achieved the state-of-the-art performance.
- A paper has been published on IEEE Transactions on Medical Imaging, as shown in publication 1.
- Two Chinese invention patents are authorized based on this topic.

Medical image segmentation based on Cross-layer attention fusion Aug.2021-Dec.2021

- Identified the characteristics of different medical images, collected samples and performed pre-processing
- Developed several modules of the medical image segmentation model based on TensorFlow to fuse multi-scale contextual information and effectively extract multi-receptive field features.
- A paper has been accepted.

Research on multi-objective multi-path planning based on Genetic Algorithm Oct.2020- Dec.2020

- Build a multi-objective multi-route planning model using genetic algorithm with multi-level coding
- Made reasonable assumptions and simplified the model based on known constraints
- Won the **Third Prize of Hunan Provincial Mathematical Modeling Competition**

Optimization on Modeling of Gasoline Octane Number June.2020-Oct.2020

- Pre-processed the data, and filtered variables based on the joint algorithm
- Established a neural network model based on TensorFlow for predicting sulfur content
- Optimized operating variables to reduce octane loss caused by gasoline processing
- Reduced the octane loss in the process, and ranked **Top 2% in the National Graduate Mathematical Modeling Competition**

Construction of Sign Language Recognition System May.2020-Oct.2020

- Designed data collecting gloves based on 9-axis sensors for gesture information collection
- Pre-processed the data transmitted from gloves
- Built a neural network model based on TensorFlow to identify Sign Language data.

Development on Pigment Tumor Recognition System Feb.2020- May.2020

- Collected image data from skin lesions and developed recognition model
- Designed a GUI interface for the pigment tumor recognition system

Static Analysis of Bridge Inspection Vehicle Components Dec.2018-June.2019

- Established the three-dimensional model of bridge inspection vehicle components using SolidWorks
- Divided the Finite Element Mesh of the established 3D model based on Hypermesh
- Established boundary conditions and analyzed the force of the bridge inspection vehicle components based on Ansys, and optimized the structure of the components according to the result.
- Won the **University 's Excellent Graduation Design Award**

SKILLS

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- **Coding:** Python, MATLAB, C, C++

- **Simulation Tools:** Ansys, Hypermesh, LINGO, Solidworks
- **Deep Learning Training Framework:** TensorFlow, PyTorch

SELECTED HONERS& AWARDS

National Level

National Mathematical Modeling Competition (Top 2% nationwide)	2020
National Encouragement Scholarship for highest academic distinction (Top 2% nationwide)	2018
The Ninth National university Student Mathematics Competition (Top 1% nationwide)	2018

Provincial Level

Third Prize of Hunan Provincial Mathematical Modeling Competition	2020
Provincial mathematics competition for university students (2 times) (Top 1% Province-wide)	2018&2017
Provincial Outstanding Graduate Honor (Top 1% Province-wide)	2018

University Level

Academic Scholarship (Top 2% nationwide, 4 times)	2020&2019&2018&2017
Outstanding graduate honor (2 times)	2021&2019
Excellent Graduation Design Award	2019
First Prize of Advanced Mathematics Competition (2 times)	2018&2017