Yuanhuiyi LYU

HKUST(GZ) · PHD STUDENT

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Personal Profile

I'm now a **PhD student** at **AI Thrust** of **HKUST(GZ)**. I obtained my B.ENG in Artificial Intelligence from **Northeastern University (NEU)**. My research interests include **Multi-modal learning** and **Generative Models**.

Education

The Hong Kong University of Science and Technology, Guangzhou — *Guangzhou*

Doctor of Philosophy in Artificial Intelligence — *Sept 2024 - Present*
- **Supervisor**: **Xuming HU**, **Ying-Cong CHEN** and **Linfeng ZHANG** @ SJTU
- **Research Area**: Multi-modal Learning, Generative Models

Northeastern University — *Shenyang*

Bachelor in Artificial Intelligence — *Sept 2019 - June 2023*
- **GPA**: **87.39**/100
- **Courses:** Object-Oriented Programming(C++) (**98**), Data Structure/Algorithm (**91**), Optimization Methods (**91**), Machine Learning (**95**), Linear Algebra (**88**), Probability Theory and Mathematical Statistics (**94**), Natural Language Processing (**85**), Computer Graphics (**90**)

Research Experience

The Hong Kong University of Science and Technology, Guangzhou — *Guangzhou*

Research Assistant — *June 2023 - Aug 2024*
- **Supevisor:** Lin WANG
- **Research Area:** Multi-modal Learning, Generative Model, 3D Vision.

NLP Lab, Tsinghua University — *Beijing*

Research Intern — *Oct 2021 - Dec 2022*
- **Supevisor:** Zhenghao Liu, Chenyan Xiong, Zhiyuan Liu
- **Research Area:** Multi-modal Learning, Information Retrieval.

NLP Lab, Northeastern University — *Shenyang*

Research Intern — *June 2021 - Sept 2021*
- **Supevisor:** Tong Xiao
- **Research Area:** Text Generation.

Publications

RealRAG: Retrieval-augmented Realistic Image Generation via Self-reflective Contrastive Learning
Yuanhuiyi Lyu, Xu Zheng, Lutao Jiang, Yibo Yan, Xin Zou, Huiyu Zhou, Linfeng Zhang, Xuming Hu
*Forty-Second International Conference on Machine Learning (**ICML**) (2025). 2025*

UniBind: LLM-Augmented Unified and Balanced Representation Space to Bind Them All
Yuanhuiyi Lyu, Xu Zheng, Jiazhou Zhou, Lin Wang
*The IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**) (2024). 2024*

Imaginator: Flexible Image Synthesis from Arbitrary Modality Combination
Yuanhuiyi Lyu, Xu Zheng, Lutao Jiang, Jiazhou Zhou, Lin Wang
ArXiv (2025). 2025

Binding Arbitrary Combination of Unequal-scale Modality with Cross-modal Knowledge Distillation
Yuanhuiyi Lyu, Xu Zheng, Yifan Jiang, Lutao Jiang, Dahun Kim, Lin Wang
ArXiv (2025). 2025

From Reusing to Forecasting: Accelerating Diffusion Models with TaylorSeers
Jiacheng Liu, Chang Zou, **Yuanhuiyi Lyu**, Junjie Chen, Linfeng Zhang
ArXiv (2025). 2025

Learning Modality-agnostic Representation for Semantic Segmentation from Any Modalities
Xu Zheng, **Yuanhuiyi Lyu**, Lin Wang
*The European Conference on Computer Vision (**ECCV Oral**) (2024). 2024*

Centering the Value of Every Modality: Towards Efficient and Resilient Modality-agnostic Semantic Segmentation

Xu Zheng, **Yuanhuiyi Lyu**, Lin Wang

*The European Conference on Computer Vision (**ECCV**) (2024). 2024*

ExACT: Language-guided Conceptual Reasoning and Uncertainty Estimation for Event-based Action Recognition and More

Jiazhou Zhou, Xu Zheng, **Yuanhuiyi Lyu**, Lin Wang

*The IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR Highlight**) (2024). 2024*

EventBind: Learning a Unified Representation to Bind Them All for Event-based Open-world Understanding

Jiazhou Zhou, Xu Zheng, **Yuanhuiyi Lyu**, Lin Wang

*The European Conference on Computer Vision (**ECCV**) (2024). 2024*

Componerf: Text-guided multi-object compositional nerf with editable 3d scene layout

Haotian Bai, **Yuanhuiyi Lyu**, Lutao Jiang, Si Jia Li, Haonan Lu, Xiaodong Lin, Lin Wang

arXiv preprint arXiv:2303.13843 (2023). 2023

Chasing Day and Night: Towards Robust and Efficient All-Day Object Detection Guided by an Event Camera

Jiahang Cao, Xu Zheng, **Yuanhuiyi Lyu**, Jiaxu Wang, Renjing Xu, Lin Wang

*The 2024 IEEE International Conference on Robotics and Automation (**ICRA**) (2023). 2023*

Universal Vision-Language Dense Retrieval: Learning A Unified Representation Space for Multi-Modal Retrieval

Zhenghao Liu, Chenyan Xiong, **Yuanhuiyi Lv**, Zhiyuan Liu, Ge Yu

*The Eleventh International Conference on Learning Representations (**ICLR**) (2023). 2023*

EIT-1M: One Million EEG-Image-Text Pairs for Human Visual-textual Recognition and More

Xu Zheng, Ling Wang, Kanghao Chen, **Yuanhuiyi Lyu**, Jiazhou Zhou, Lin Wang

arXiv preprint arXiv:2407.01884 (2024). 2024

Honors and Awards(Selected)

2023	**Outstanding Graduation Dissertation (<2%)**, Northeastern University		*Shenyang, China*
2022	**Outstanding Students Scholarship**, Northeastern University		*Shenyang, China*
2021	**Outstanding Students Scholarship**, Northeastern University		*Shenyang, China*
2020	**Outstanding Students Scholarship**, Northeastern University		*Shenyang, China*

References available upon request.