LIU YICHEN

lyichen799@gmail.com Phone: (+852)51018037 or (+86)15020086109
Github Page Google Scholar
Hong Kong

EDUCATION

The Hong Kong University of Science and Technology(HKUST) *Sep 2023 - Oct 2024*
Master of Philosophy (MPhil) in Computer Science and Engineering

- This is a **FULLY-FUNDED**, research-oriented master program
- I finished this **TWO-YEAR** program within ONE-YEAR
- CGA: 3.9/4.3
- Closely collorate with Prof. Chi Keung Tang and Prof. Yu Wing Tai

The Hong Kong University of Science and Technology(HKUST) *Sep 2019 - Jun 2023*
Bachelor of Computer Science and Mathematics in General Mathematics Track (double majors)

- Math Major CGA: 3.99/4.3 Major CGA:3.85/4.3 CGA: 3.74/4.3.
- First Class Honors.
- I conducted three research projects.

National University of Singapore(NUS) *Jan 2022 - May 2022*
School Exchange Program

JOBS AND INTERNSHIP

SenseTime *Sep 2024 - Now*

- Focus on driving scenario generation.

Hexagon *June 2022 - Aug 2022*

- I involved in front end and back end development of a measuring tool management system, using Vue and C#.
- I involved in works related to computer vision in a project of automated defect detecting, which included classifying images of electronics, measuring length and detecting defects.

AWARD AND SCHOLARSHIP

- **Second Runner-up of IEEE (HK) Computational Intelligence Chapter FYP & PG Competition 2022-2023**
- **the University's Scholarship Scheme for Continuing Undergraduate Students in the 2020/21 academic year**
- **the University's Scholarship Scheme for Continuing Undergraduate Students in the 2021/22 academic year**
- **HKUST Study Abroad Sponsorship 2021/22**
- **Dean's List of 2019-20 Fall**
- **Dean's List of 2020-21 Fall**
- **Dean's List of 2021-22 Fall**

SELECTED PUBLICATION

UniMLVG: Unified Framework for Multi-view Long Video Generation with Comprehensive Control Capabilities for Autonomous Driving
Rui Chen, Zehuan Wu, Yichen Liu, Yuxin Guo, Jingcheng Ni, Haifeng Xia, Siyu Xia.
International Conference on Computer Vision (ICCV), 2025 [arXiv link]

MaskGWM: A Generalizable Driving World Model with Video Mask Reconstruction.
Jingcheng Ni, Yuxin Guo, Yichen Liu, Rui Chen, Lewei Lu, Zehuan Wu.
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025. [arXiv link]

SANeRF-HQ: Segment Anything for NeRF in High Quality.
Yichen Liu, Benran Hu, Chi-Keung Tang, Yu-Wing Tai.
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024. [arXiv link]

Instance Neural Radiance Field.
Yichen Liu*, Benran Hu*, Junkai Huang*, Yu-Wing Tai, Chi-Keung Tang.
** indicates Equal contribution*
International Conference on Computer Vision (ICCV), 2023. [arXiv link]

NeRF-RPN: A general framework for object detection in NeRF.
Benran Hu*, Junkai Huang*, Yichen Liu*, Yu-Wing Tai, Chi-Keung Tang.
** indicates Equal contribution*(I am one of the first co-authors)
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023. [arXiv link]

SELECTED RESEARCH AND PROJECTS

Research Focus: Generative Model, Multi-modality.
Other Research Interest: 3D Reconstruction, Scene Understanding.

Open Driving World Model. *SenseTime, Sep 2024 - Now*

- This is an open-source initiative, focusing on autonomous driving video generation. Our mission is to provide a high-quality, controllable tool for generating autonomous driving videos using the latest technology. Our video generation method now is mainly based on these two papers – MaskGWM and UniMLVG. Additionally, we propose two methods (LiDAR MaskGIT and LiDAR DiT) to generate sequential LiDAR data. We have a short report for LiDAR MaskGIT here.
- You can check our demo and code in our project codebase

SANeRF-HQ: Segment Anything for NeRF in High Quality. *HKUST, May 2023 - Nov 2023*

- MPhil project in HKUST, advised by Prof.Chi Keung Tang and Prof.Yu Wing Tai
- We propose SANeRF-HQ, a pipeline to achieve zero-shot 3D segmentation in Neural Radiance Field(NeRF). Provided with a pre-trained NeRF and user prompts, our method can segment the target object(s) in 3D, represented by NeRF.
- I finished most of the project myself, ranging from implementation and experiment conduction to paper writing and demonstrations.
- The paper is accepted by CVPR2024. [paper link][project page]

Instance Neural Radiance Field *HKUST, Jan 2023 - March 2023*

- Extension of my final year project year project(HKUST), advised by Prof.Chi Keung Tang and Prof.Yu Wing Tai
- We introduce the task of 3D object segmentation in nerual radiance field(NeRF) and propose the one of the first pipelines. Given a pre-trained NeRF of a scene, our target is to predict the 3D segmentation of all objects, represented by NeRF.
- This project is finished by three undergraduate students and we equally contribute to our project. I involved in the coding of our baseline, especially the 2D mask refinement and rendering, and conducted half of the ablation studying. Also, I completed most of the paper writing.
- The paper is accepted by ICCV2023. [paper link] [code][demo video]

NeRF-RPN: A general framework for object detection in NeRFs *HKUST, May 2022 - Nov 2022*

- Final year project advised by Prof. Chi Keung Tang and Prof. Yu Wing Tai
- We introduce the task of 3D object detection in nerual radiance field(NeRF) and propose the first region proposal network(RPN) in 3D space based on the NeRF representation, called NeRF-RPN. Given a pre-trained NeRF of a scene, NeRF-RPN predict all 3D object-oriented bounding boxes of objects in it.
- This project is finished by three undergraduate students and we equally contribute to our project. All of us involved in the coding, experiment and paper writing. I conducted the dataset preparation of Hypersim and involved in the manual data selection of the other two. In the technical section, I coded our initial baseline and explored the possible improvement methods. Additonally, I involved in the paper writing.
- This paper is accepted by CVPR2023. [paper link] [code][demo video]

Text-Driven 3D Volume Completion with LLM through Patchification. *HKUST, Jan 2024 - May 2024*

- MPhil project in HKUST, advised by Prof.Chi Keung Tang and Prof.Yu Wing Tai
- This is an experimental work on LLM and 3D completion. We propose VP-LLM, a pipeline to achieve 3D model completion with text control. 3D models are represented by voxel grids, and integrated into LLM through patchification (split the voxel grid into small patches). We expect the LLM can understand text instructions and the incomplete voxel grid, and then output the entire 3D models.
- We put our paper on arXiv. [paper link]

EXTRACURRICULAR

Robomaster Robotic Competition *Nov 2019 - Aug 2020*

- Our team designed robots for the RoboMaster University Series (RMU)
- I worked as a hardware teammate. My work included design and test of PCB board and wiring of robots.

Peer Mentor Program *Aug 2020 - Dec 2020*

- help new students to adapt university life