LIU YICHEN

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EDUCATION

Hong Kong University of Science and Technology *Sep 2019 - Now*
Bachelor of Computer Science and Mathematics (double majors)

- Major CGA:3.9/4.3 CGA: 3.8/4.3.
- Complete 4 honors courses: Honors General Physics I, Honors Design and Analysis of Algorithms, Honors in Linear and Abstract Algebra I,Honors Probability. Grades in all are in A range.
- Achieve A range in all math courses.
- I worked on two research projects, advised by Prof. Chi Keung Tang and Prof. Yu Wing Tai

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

AWARD

- **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**
- **Scholarship Opportunities for Reaching Out Activities 2021/22**
- **Dean's List of 2019-20 Fall**
- **Dean's List of 2020-21 Fall**
- **Dean's List of 2021-22 Fall**

PUBLICATION

NeRF-RPN: A general framework for object detection in NeRF.
Benran Hu*, Junkai Huang*, Yichen Liu*, Yu-Wing Tai, Chi-Keung Tang.
** Equal contribution; order of authorship was determined alphabetically*
arXiv pre-print: https://arxiv.org/abs/2211.11646 , under CVPR'23 review.
Demo Video: https://www.youtube.com/watch?v=M8_4Ih1CJjE

ONeRF: Unsupervised 3D Object Segmentation from Multiple Views
Shengnan Liang*, Yichen Liu*, Shangzhe Wu, Yu-Wing Tai, Chi-Keung Tang.
** Equal contribution; order of authorship was determined alphabetically*
arXiv pre-print: https://arxiv.org/abs/2211.12038

RESEARCH AND PROJECTS

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

- Final year project(HKUST) 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.
- The paper has been accepted by CVPR2023. (paper link and demo video)

ONeRF: Unsupervised 3D Object Segmentation from Multiple Views *July 2021 - Nov 2021*

- Independent work(HKUST) advised by Shangzhe Wu, Professor Chi Keung Tang and Yu Wing Tai
- The project is about unsupervised object segmentation in 3D. Given a multi-view images of a scene, we propose a pipline to abstract the objects unsupervisedly in 3D. Each object is represented by a Neural Radiance Field(NeRF).
- Paper was submitted to CVPR2022(not accepted). (paper link)
- Thanks to Xinhang, our project was improved and his paper has been accepted by NeurIPS 2022. See this link

Computer Graphics Course Project *Jan 2021 - May 2021*

- Using C++, opengl, fltk, we finished 4 projects related to different computer graphics topics. The projects are
  - Project 1: Impressionist: An interactive impressionistic paint system
  - Project 2: Modeler: A viewer and a hierarchical articulated robot
  - Project 3: Trace: A program to create photo-realistic ray traced images with shadows, reflections, etc.
  - Project 4: Animator: An extension of project 2, including animation curves and particle system
- We extended the projects and coded extra algorithm, such as image matting, metal ball, CSG, light field.
- Project link: `https:github.com/lyclyc52/COMP4411-course-project`

Rust Interpreter *Jan 2022 - April 2022*

- - Using TypeScript, I implemented an interpreter and a type checker for a subset of Rust.
- The subset includes the basic data types(int32, f32, Array, Tuple, Struct), control flow, function, etc. and some main feature of Rust, which are borrowing& referencing, smart pointer(and a heap).
- Project link: `https://github.com/lyclyc52/Rust_interpreter`

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.

INTERNSHIP

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.