EMILY JIA

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STATEMENT

I'm Emily Yue-ting Jia. I'm a first-year PhD student at University of Southern California, advised by **Prof. Yajie Zhao** and **Prof. Yue Wang**. I received my bachelor degree from Tsinghua University. My current research interest is 3D reconstruction using neural radiance fields (NeRF). And I'm currently working on clothed human reconstruction from sparse views and large-scale outdoor reconstruction with challenging lightning condition variance and dynamic objects. Previously I have done works on 3D indoor scene reconstruction under the guidance of **Prof. Yushen Liu**. And I have also done some research on 3D point cloud under the guidance of **Prof. Li Yi**.

Besides research, I also spend a lot of time on software engineering. I was a leader in Network branch of Tsinghua CS student technology group. I have plenty of experience on website development and tutoring in website development, as part of our group activity.

EDUCATION

Ph.D in Computer Science, University of Southern California	August 2023 - Now
Undergraduate in Computer Science and Technology, Tsinghua University	August 2019 - Jul 2023
GPA: 3.79	

SKILLS

Research	computer vision, 3D vision, operating system, recommendation algorithm
Engineering	Android, web front end, Database
Tools	Cuda, Nginx, Docker, Latex, Blender
Language	Python, C++/C, Java, Rust, JavaScript, Verilog

SCHOLARSHIP

I'm awarded as Excellent International Student by Beijing government from 2019 to 2022.

RESEARCH PROJECTS

Project 1 NeRFPrior: Learning Neural Radiance Field as a Prior for Indoor Scene Reconstruction

- from summer 2022 to spring 2023, with **Prof. Yushen Liu**
- **submitted to AAAI 2024**
- We propose a 2 stage training pipeline for faster and more detailed 3D scene reconstruction. On the first stage, we use a voxelized neural network to approximate the radiance field. On the second stage, we input the coarse radiance field as prior into a SDF-based Nerf and get a consistent and finegrained field for mesh reconstruction.
- Experiments show that our method achieve better reconstruction performance with less training time, compared with previous method such as Neus and unisurf. Meshes retrieved from our method have flatter wall and floor area and more accurate shape for small crafts such as bowls and spoons on table.

Project 2 Domain Adaptation on Point cloud Completion

- from fall 2021 to spring 2022, with **Prof. Li Yi**
- We propose to use structure as a guide for point cloud completion. Given a partial scan, we first predict its coarse cuboid structure using conditional GAN. Next, we refine the coarse cuboid prediction and output complete point clouds.
- Note that we do not use paired ground truth data(we only needs ground truth cuboid structure set for the training of condition GAN), our methods can be directly trained on target domain.

Project 3 Learning structure deformation using cuboid abstraction

- from summer 2021 to fall 2021, with **Prof. Li Yi**

- We propose a method to learn possible variation for certain kind of human-made objects unsupervisedly. We first extract the cuboid structure for each object. Then we learn several meta variations for the predicted structure by deforming the object to other objects in the set.

- Experiments show that the network do learn many meaningful and low dimensional structure deformation, and the learnt deformation can guide meaningful point cloud deformation.

OTHER PROJECTS

Project 1 Chrome Recorder Extension

- A chrome extension enables the recording of clicking, copying, inputing and page capture.

- GitHub: Chrome Recorder Extension

- used by Tsinghua NLP lab for data collection.

Project 2 Erasql

- A simple relation database with index manager, record manager, file manager, script parser and executor. Support basic management for database and tables.

- scored 2nd among 90 people in Database class and get me an A+!

Project 3 Think-top CPU

- A simple 5-stage-pipeline CPU supporting Riscv.

- Interrupt/Exception Handler Delegation, virtual address and page table are supported. Experiments show that this CPU is enough to support simple operation systems like ucore.

- scored 3rd among over 50 teams in Computer Structure class!

Project 4 Dongfeng education app

- an android app based on knowledge maps.

- win a third prize for Educational App Competition!