Xiyu Zhang

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Education

Zhejiang University, CKC, Hangzhou, China 2019 – Expected Mar. 2023

Major in Artificial Intelligence (AI)
GPA: 3.84/4 (or 88.22/100)

Experience

Introduction to Computer Vision Project Nov. 2021 – Dec. 2022

Python

In this project, we completed three subtasks Camera Localization, Depth Estimation, and Semantic Segmentation on 10 testing photos using given 61 photos of Mengminwei Building in Zhejiang Unversity.

Camera Localization

First, we use COLMAP to build a sparse model with 61 given photos and camera parameters. After that, we can establish a 3D-2D relationship between the points in the model and the pixels in the picture. Then we use feature matching methods such as SIFT or other neural network-based methods like LoFTR to obtain the 2D-2D correspondence between the query image and the database image, and obtain the 3D-2D relationship between 3D points and pixels in the query image. And in the end, we directly use Hierarchical-Localization based on Super-Point and Super-Glue to get the camera poses.

Depth Estimation

Our depth estimation is based on COLMAP. We have also tried using neural-based MVS methods like MVSnet, CasMVSNet to get a more refined model , but there are still many missing values and need to be completed. We have used several interpolation methods or depth completion methods, but none of them can achieve better results than the combination of the depth map predicted by the monocular depth estimation network and the COLMAP depth map.

Semantic Segmentation

We used several pretrained models based on large-scale datasets and relabeled the outputs. Then we use an ensemble approach to combine several models and weight them. We found that the network resizes the images, so before we feed the images to the network, we first cut them into small pieces and we end up with 0.64 IoU

Intern in ZJU3DV Apr. 2022 – Present

I'm an intern in ZJU3DV, under the guidance of Prof. Xiaowei Zhou and I'm interested in 3D reconstruction, and 3D. I reproduced NeRF using Pytorch. And I'm reproducing VolSDF these days.

Course And Skills

Course: Machine Learning Sep. 2020 – Jan. 2021

Python, PyTorch

There are six assignments in this course, and we implemented SVM, KNN, PCA, Decision Tree using Python, and used PyTorch to implemente Deep Q-Learning on CartPole-v0(OpenAI Gym),

Course: Introduction to Computer Vision Sep. 2021 – Jan. 2022

Python, PyTorch

In this course, we learned about image processing, structure from motion, depth estimation, 3D reconstruction, and some tasks like semantic segmentation, and object detection.

Skills

- Programming Languages: Python > C > C++
- Deep Learning Frameword: PyTorch

♡ Honors and Awards

2nd Prize, The Chinese Mathematics Competitions(Non-Mathematics) Dec. 2020
3rd Prize, Zhejiang Unversity Scholarship Jan. 2021
3rd Prize, Zhejiang Unversity Scholarship Dec. 2021