TIANYOU ZHANG

Summer Intership
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EDUCATION

Visual Measurement Lab, Beihang University (BUAA), Beijing, China 2021 – Present

Master student in Instrumentation Science and Technology, expected Jan 2024

- GPA: 3.81 / 4
- Relevent Courses: Optimization Method(99), Multiple View Geometry in Computer Vision(94), Image Analysis and Recognition(90)

Beihang University (BUAA), Beijing, China 2017 – 2021

B.S. in Instrumentation Science and Technology

- GPA: 3.72 / 4
- Relevent Courses: Automatic Control Theory(94), Engineering Optics(93), Digital Electronics Technology(97)

EXPERIENCE

6-DoF Pose Estimation and Stereo Depth Estimation Sep. 2021 – Present

Python, PyTorch Laboratory Projects

Accomplished tasks about monocular 6-DoF pose estimation of rigid objects from RGB images and depth measurement via two tracking cameras. Combined depth with surface normals of objects to predict their 6-DoF pose in pose estiamtion task. Method was based on *GDR-Net* and reached 95.79% in ADD(-S) 0.1d, outperforming the baseline at 93.7%. Now 3D vision based on binocular stereo vision system is my key research area.

Key features extraction and reconstruction Mar. 2020 – Jun. 2021

Python, PyTorch Individual Project

Publication: *3D Reconstruction of Aircraft Structures via 2D Multi-view Images*

——Proceedings of the SPIE, Volume 12059, id. 120590C 8 pp. (2021).
Zhang, Tianyou ; Fan, Runze ; Zhang, Yu ; Feng, Guangkun ; Wei, Zhenzhong

Accomplished tasks about extracting key structure features about airplane from single RGB images, and reconstructing the structure features from three views. Inspired from human pose estimation, I think about airplane's key structures as human skeleton and annotate in the way of human pose estimation. In reconstruction process, multiple view geometry was applied in features fusion and got error at 1.469% in a new-defined Mean Per Structure Position Error(MPSPE).

Swin-Pet: Swin-Transformer for Pet Classification May. 2022

Python, PyTorch Course Project

Started at collecting images from the Internet and the dataset contained 39 categories of dogs and cats, and every category contained about 200 images. Evalution result was 96.7(ACC@1) and 99.6(ACC@5).

HONORS AND AWARDS

Beihang University Merit Student 2018, 2019
Beihang University Second Prize Scholarship 2018, 2019, 2021
Beihang University Excellent Student Cadre 2017, 2018

SKILLS

Professional Competence

- Proficient at binocular and multi-view stereo vision geometry and measurement methods, experienced in multi-view stereo reconstruction;
- Familiar with the traditional and learning methods of feature extraction and matching, 6-DoF pose estimation and human pose estimation;
- Familiar with camera imaging principles, camera calibration methods, optical system evaluation indicators.

Programming and Computation

- Programming Languages: Python, C++, Matlab
- Framework: PyTorch

Languages

- Native Language: Mandarin
- English: IELTS 7.0