TIANYOU ZHANG

Ph.D. Application
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EDUCATION

Key Laboratory of Precision Opto-mechatronics Technology, Beihang University 2021.09 –

M.S. in Instrument Science and Technology, expected in Jan. 2024

- GPA: 3.81 / 4
- Relevant Courses: Optimization Method(99), Multiple View Geometry in Computer Vision(94), Intelligence Sensing and Autonomous System(93)

Beihang University 2017.09 – 2021.07

B.S. in Instrument Science and Technology

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

EXPERIENCE

6-DoF Pose Estimation and Stereo Depth Estimation 2021.09 – Present

Python, PyTorch Laboratory Projects

- Proposed a novel approach introducing depth information to support surface normals for 6D pose estimation because it integrates 3D scale information and directly suggests objects' positions in the scene. Reached 95.79% in ADD(-S) 0.1d on the LineMOD dataset, outperforming the baseline (GDR-Net) at 93.7%.
- Established a non-ideal binocular stereo measurement system and built a measurement error model to instruct depth estimation. Introduced image super-resolution method to key points extraction and matching tasks, which resolves the feature matching problem of binocular images in different scales.

Expected Publication:
Rethinking Depth and Surface Normals in 6D Pose Estimation

——Under Submission
First Author

Multi-view Images Features Extraction and Reconstruction 2020.03 – 2021.01

Python, PyTorch Individual Project

- Extracted essential aeroplane structures from single RGB images and reconstructing the structures from three views. Inspired by human pose estimation, the aeroplanes' critical structures are regarded as human skeletons and annotate them in the way of human pose estimation. In the reconstruction process, multiple view geometry was applied in features fusion and got an error at 1.469% in a novel-defined Mean Per Structure Position Error(MPSPE).

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

HONOURS 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