

TIANYOU ZHANG

Summer Research

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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), Image Analysis and Recognition(90)

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

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 estimation task. Method was based on *GDR-Net* and reached 95.79% in ADD(-S) 0.1d, outperforming the baseline at 93.7%. Currently, relevant researches are carried on about binocular stereo vision measurement for aircraft.

Key features extraction and reconstruction 2020.03 – 2021.01

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).

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