# Tianyou Zhang

Ph.D. Application

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## Education

**School of Instrumentation and Optoelectronic Engineering, Beihang University** 2021.09—

*M.S.* in Instrument Science and Technology, excepted in Jan. 2024

- GPA: 3.81 / 4
- Relevant Courses: Optimization Methods(99), The Basis of 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: Digital Electronics Technology(97), Automatic Control Theory(94), Engineering Optics(93)

## Experience

**6-DoF Pose Estimation and Stereo Vision Measurement** 2021.09 –Present

Laboratory Projects *Python, PyTorch*

Contribution in the first project was about monocular 6-DoF pose estimation of rigid objects from RGB images—combined depth with surface normals of objects to predict their 6-DoF pose in the pose estimation task. The method was based on GDR-Net and reached 95.79% in ADD(-S) 0.1d, outperforming the baseline at 93.7%. Currently, relevant research is carried on about reliable and accurate aircraft binocular stereo vision measurement.

**Multi-view Images Features Extraction and Reconstruction** 2020.03 –2021.01

Individual Projects *Python, PyTorch*

Work on extracting essential aeroplane structures from single RGB images and reconstructing the structures from three views. Inspired by human pose estimation, I think about aeroplanes' critical structures 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 in this project:

*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

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|---|---|
| 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

**Programming and Computation**

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

**Languages**

- Native Language: Mandarin
- English: IELTS 7.0

## Interests

- Computer Vision: 3D computer vision about reconstruction and generalization, multi-view vision methods
- Artificial Intelligence: Novel vision model to process images reliably, efficiently, intellectually and fair
- CV with other areas: Collaboration between computer vision and natural language processing, augmented reality and human activity