

# BIN FAN

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## 🎓 EDUCATION

**Northwestern Polytechnical University (NPU)**, Shaanxi, China 2019.04 – 2023.03

*PhD candidate in Information and Communication Engineering, expected March 2023*

◆ Advisor: Yuchao Dai

**Northwestern Polytechnical University (NPU)**, Shaanxi, China 2016.09 – 2019.03

*M.E. in Control Science and Engineering*

**Northwestern Polytechnical University (NPU)**, Shaanxi, China 2012.09 – 2016.06

*B.S. in Statistics*

## 🔍 RESEARCH INTERESTS

3D Vision & Computational Photography: Rolling Shutter · Image Restoration · Video Frame Interpolation · Motion Estimation · 3D Reconstruction · Novel View Synthesis

## 🎓 PUBLICATIONS

1. **Bin Fan**, Yuchao Dai, Zhiyuan Zhang, Qi Liu, Mingyi He. Context-Aware Video Reconstruction for Rolling Shutter Cameras[C]. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
2. **Bin Fan**, Yuchao Dai. Inverting a Rolling Shutter Camera: Bring Rolling Shutter Images to High Framerate Global Shutter Video[C]. *IEEE International Conference on Computer Vision (ICCV)*, 2021:4228–4237.
3. **Bin Fan**, Yuchao Dai, Mingyi He. SUNet: Symmetric Undistortion Network for Rolling Shutter Correction[C]. *IEEE International Conference on Computer Vision (ICCV)*, 2021:4541–4550.
4. **Bin Fan**, Yuchao Dai, Ke Wang. Rolling-Shutter-Stereo-Aware Motion Estimation and Image Correction[J]. *Computer Vision and Image Understanding (CVIU)*, 2021, 213:103296. (IF=3.876)
5. **Bin Fan**, Yuchao Dai, Zhiyuan Zhang, Ke Wang. Differential SfM and Image Correction for a Rolling Shutter Stereo Rig[J]. *Image and Vision Computing (IVC)*, 2022, 104492. (IF=2.818)
6. **Bin Fan**, Ke Wang, Yuchao Dai, Mingyi He. RS-DPSNet: Deep Plane Sweep Network for Rolling Shutter Stereo Images[J]. *IEEE Signal Processing Letters (SPL)*, 2021, 28:1550–1554. (IF=3.109)
7. **Bin Fan**, Yuchao Dai, Zhiyuan Zhang, Mingyi He. Fast and Robust Differential Relative Pose Estimation with Radial Distortion[J]. *IEEE Signal Processing Letters (SPL)*, 2021, 29:294–298. (IF=3.109)
8. Ke Wang, **Bin Fan**, Yuchao Dai. Relative Pose Estimation for Stereo Rolling Shutter Cameras[C]. *IEEE International Conference on Image Processing (ICIP)*, 2020:463–467.
9. Chunhui Zhao, **Bin Fan**, Jinwen Hu, Quan Pan, Zhao Xu. Homography-Based Camera Pose Estimation with Known Gravity Direction for UAV Navigation[J]. *Science China Information Sciences*, 2021, 64(1): 1–13. (IF=4.380)
10. Jihuang Dai, Yuchao Dai, **Bin Fan**. Self-Supervised Multi-Body Scene Flow Estimation[J]. *Neurocomputing*, 2021, 463: 472–482. (IF=5.719)
11. Zhiyuan Zhang, Jiadai Sun, Yuchao Dai, **Bin Fan**, Mingyi He. VRNet: Learning the Rectified Virtual Corresponding Points for 3D Point Cloud Registration[J]. *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2022. (IF=4.685)

12. Zhiyuan Zhang, Jiadai Sun, Yuchao Dai, **Bin Fan**, Qi Liu. Searching Dense Point Correspondences via Permutation Matrix Learning[J]. *IEEE Signal Processing Letters (SPL)*, 2022. (IF=3.109)
13. Chunhui Zhao, **Bin Fan**, Limin Tian, Jinwen Hu, Quan Pan. Statistical Optimization Feature Matching Algorithm Based on Epipolar Geometry[J]. *Acta Aeronautica et Astronaut Sin*, 2018, 39:158-166.

## 👤 PROJECTS

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★ **Motion & Depth Estimation of Stereo Rolling Shutter Camera** 2019.04 – 2022.09

*DJI*

**Principal Investigator**

★ **Monocular Dense 3D Reconstruction of Complex Dynamic Scenes** 2019.01 – 2022.12

*National Natural Science Foundation of China*

Key personnel for localization and reconstruction based on monocular videos

★ **Autonomous Perception and Intelligent Flight Technology** 2017.06 – 2018.12

*Innovation Special Zone Project*

Key personnel for outfield experiments of obstacle detection and avoidance

★ **Dynamic Autonomous Calibration of Distributed Multi-Camera Arrays** 2017.01 – 2018.12

*Natural Science Foundation of Shaanxi Province*

Key personnel for principle analysis and code debugging of multi-camera SLAM

## ♡ HONORS AND SERVICES

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### • Awards

- **CVPR 2022 Doctoral Consortium** (Mentor: Marc Pollefeys) 2022
- First-Class Academic Scholarship of Northwestern Polytechnical University (Top 10%) 2013–2020
- **Excellent** Graduate Student, Northwestern Polytechnical University, China (Top 5%) 2019
- National Scholarship (Top 5%) 2018
- Third-Class of Northwest Division of 13th Graduate Electronic Design Competition 2018
- **Excellent** Undergraduate Student, Northwestern Polytechnical University, China (Top 5%) 2016
- Outstanding Volunteer of 12th International Conference on Intelligent Unmanned Systems 2016
- Second-Class of NPU's Mathematical Modeling Competition 2015
- National Encouragement Scholarship 2015

### • Talks

- Get a Footage without Rolling Shutter Effect (**Invited Talk**) 2021.11  
*Samsung, Xi'an, China*
- International Conference on Computer Vision (**Poster Presentation**) 2021.10  
*Virtual attendance*
- International Conference on Control and Automation (**Oral Presentation**) 2018.06  
*Anchorage, USA*
- International Conference on Unmanned Systems (**Oral Presentation**) 2017.10  
*Beijing, China*

### • Services

- Reviewing for Journals: **TPAMI**, *Sensors Journal*, *Applied Sciences*
- Reviewing for Conferences: **CVPR 2022**, **ECCV 2022**, **IROS 2021**, **ICME 2020-2021**