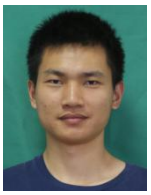
Menghan Xia



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Affiliation: Computer Vision & Remote Sensing (CVRS) Lab, School of Remote Sensing and Information Engineering, Wuhan University.

Research Interests

My research interests lie in the areas of Computer Vision. Particularly, I am interested in Image Processing and 3D Reconstruction.

Education

2014/9–Present **M. Eng.** in School of Remote Sensing and Information Engineering, Wuhan University
GPA: uncertain.

2010/9–2014/7 **B. Eng.** in School of Remote Sensing and Information Engineering, Wuhan University
GPA: 3.61/4.0.

Publications

Under-Review

[1] **Menghan Xia** and Jian Yao, Renping Xie, Li Li, and Wei Zhang. "Globally Consistent Alignment for Planar Mosaicking via Topology Analysis", *Pattern Recognition* (**PR**), 2016.

[2] Li Li, Jian Yao, **Menghan Xia**, and Wei Zhang. "Optimal Seamline Detection in Dynamic Scenes via Graph Cuts for Image Mosaicking", *Machine Vision and Applications*, 2016.

[3] Jian Yao, Kang Liu, Xiaohu Lu, Yahui Liu, Renping Xie, **Menghan Xia**, and Qifei Zeng. "Automatic Multi-Image Stitching for Concrete Bridge Inspection by Combining Point and Line Features", *Automation in Construction*, 2016.

[4] **Menghan Xia**, Jian Yao, Xiaohu Lu, Li Li. "Robust Alignment for UAV Images Based on Adaptive Adjustment", *International Workshop on Pattern Recognition in Remote Sensing* (**PRRS**), 2016.

Accepted

[1] **Menghan Xia**, Jian Yao, Li Li, Renping Xie and Yahui Liu. "Consistent Tonal Correction for Multi-View Remote Sensing Image Mosaicking", *XXIII ISPRS Congress* (**ISPRS**), 2016.

[2] Kai Chen, Jian Yao, **Menghan Xia**, Xinyuan Gui, Li Li and Xiaohu Lu. "A Unified Blending Framework for Panorama Completion via Graph Cuts", *XXIII ISPRS Congress* (**ISPRS**), 2016.

[3] Yahui Liu, Jian Yao, Kang Liu, Xiaohu Lu and **Menghan Xia**. "Optimal Image Stitching for Concrete Bridge Bottom Surfaces Aided by 3D Structure Lines", *XXIII ISPRS Congress* (**ISPRS**), 2016.

[4] Kai Li, Jian Yao, **Menghan Xia**, and Li Li. "Joint Point and Line Segment Matching on Wide-Baseline Stereo Images", *IEEE Winter Conference on Applications of Computer Vision* (**WACV**), 2016.

[5] Li Li, Jian Yao, Renping Xie, **Menghan Xia**, and Binbin Xiang. "Superpixel-Based Optimal Seamline Detection via Graph Cuts for Panoramic Images", *IEEE International Conference on Information and Automation* (**ICIA**), 2016.

[6] **Menghan Xia**, Jian Yao, Li Li, and Xiaohu Lu. "Globally Consistent Alignment for Mosaicking Aerial Images", *IEEE International Conference on Image Processing* (**ICIP**), 2015.

[7] Mi Zhang, Jian Yao, **Menghan Xia**, Kai Li, Yi Zhang, and Yaping Liu. "Line-Based Multiple Label Energy Optimization for Fisheye Image Rectification and Calibration", *IEEE Conference on Computer Vision and Pattern Recognition* (**CVPR**), 2015.

Research Experience

Indoor SLAM based on laser. Date: 12/2015-04/2016.

- ✧ Learned techniques for point clouds registration.
- ✧ Investigated algorithms for indoor scene reconstruction based on point clouds with the assistant of IMU.

Color consistency correction. Date: 03/2015-07/2015, 07/2016-present.

- ✧ Proposed an algorithms for color correction of multiple images in mosaic mission, which utilities the color mapping relations in overlaps as constraints, of which the two-step strategy : color mapping based on referring maximum consistent subset, and global optimization on mapping curves, improves both the effectiveness ans robustness.

Sequential image stitching. Date: 09/2014-01/2015, 04/2016-07/2016.

- ✧ Proposed an algorithm for automatically stitching images of planar scenes, which is able to keep the optimal balance between local alignment accuracy and global consistency.
- ✧ Proposed an efficient image topology construction algorithm to support the automatic mosaic of disorder image sequence.
- ✧ Developed a software using Qt and OpenCV for remote image stitching.

Distorted image rectification. Date: 07/2014-09/2014.

- ✧ Investigated algorithms for image rectification, which requires two or more images to make matching and utilities the curvature of epipolar curves to compute the distortion parameters.
- ✧ Co-developed an algorithm for fish-eye image rectification, which detects and selects the optimal curves of a single image under the energy framework of graph cut and utilities the original linearity of them to compute the model parameters.

Structure from motion. Date: 10/2013-6/2014.

- ✧ Developed an algorithm for automatically reconstructing point cloud from image feature matching, which supports both image sequence and video input. The algorithm comprehensively exploits the relations between adjacent images to remove outliers and optimize camera poses, which also inclues closing loop detection module.
- ✧ Investigated algorithms for camera calibration.

Selected Awards

- ✧ **Microsoft Aerial Survey Scholarship**, 2015.
- ✧ **Excellent Graduate Freshman Scholarship of Wuhan University**, 2014.
- ✧ **Outstanding Undergraduate Graduate of Wuhan University**, 2014.
- ✧ **Excellent Student Scholarship in Wuhan University**, 2011-2012.

Invited Talks

- ✧ “Consistent Tonal Correction for Multi-View Remote Sensing Image Mosaicking”, XXIII ISPRS Congress 2016, Prague, 07/2016.
- ✧ “Detection and Removal of Clouds in Remote Sensing Images”, Wuhan, 6/2013.

Programming Skills

Languages: C, C++, Matlab, HTML.
Libraries: OpenCV, Qt, MFC, Boost, OSG.