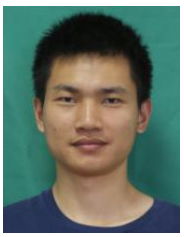
Menghan Xia



Email: menghx@whu.edu.cn

Homepage: http://menghanxia.github.io/

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, especially in Image Processing and 3D Reconstruction. I have done some works on : Structure from Motion and Visual&Laser SLAM; Image Rectification for Fish-eye and Normal Image; Image Stitching; Color Consistency Adjustment; Currently, I have been working on the problem of color consistency adjustment.

Education

2014/9–Present **M. Eng.** in School of Remote Sensing and Information Engineering, Wuhan University
GPA: 3.26/4.0.

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

Publications

In Progress

[1] 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.

[2] 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.

Conference

[1] **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* (**ICPR-Workshop**), Dec. 2016.

[2] Kai Li, Jian Yao, **Menghan Xia**, Li Li."3D Line Segment Reconstruction in Structured Scenes via Coplanar Line Segment Clustering", *Asian Conference on Computer Vision* (**ACCV**), Oct. 2016.

[3] **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**), Jul. 2016.

[4] 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**),Jul. 2016.

[5] 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**),Jul. 2016.

[6] 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**), Apr. 2016.

[7] 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**), Mar. 2016.

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

[9] 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**), Apr. 2015.

Journal

[1] Li Li, Jian Yao, Renping Xie, **Menghan Xia**, and Wei Zhang. "A Unified Framework for Street-View Panorama Stitching", *Sensors*, Dec. 2016.

[2] **Menghan Xia** and Jian Yao, Renping Xie, Li Li, and Wei Zhang. "Globally Consistent Alignment for Planar Mosaicking via Topology Analysis", *Pattern Recognition* (**PR**), Jan, 2017.

Patents/Software Copyrights

[1] Jian Yao, **Menghan Xia** and Li Li. "A Consistent Color Correction System for Sequential Remote Sensing Images", Application Number: CN201610269941.4 , 2016.

[2] Jian Yao, Yinqing Dong, Jing Ren, Tong He, Mengsheng Lu, **Menghan Xia**. "A Software for Panorama Stitching", Authorization Number: 2015R11S199703 , 2015.

Research Experiences

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 cloud registration 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: 06/2014-09/2014.

✧ 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 of fish-eye camera.

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

✧ Developed an algorithm for automatically reconstructing point cloud from image feature matching or optical-flow tracking, 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 includes closing loop

detection and amendment module.

- ✧ Investigated the algorithms for camera calibration based on calibration objects.

Selected Awards

- ✧ **First Prize Scholarship of Wuhan University**, 2016.
- ✧ **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**, 2012.
- ✧ **Excellent Student Scholarship in Wuhan University**, 2011.

Invited Talks

- ✧ "Consistent Tonal Correction for Multi-View Remote Sensing Image Mosaicking", XXIII ISPRS Congress 2016, Prague, 07/2016.
- ✧ "HDR Image Tone Mapping", Wuhan, 4/2015.
- ✧ "Clustering Views for Multi-view Stereo", Wuhan, 8/2014.
- ✧ "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.

Language Proficiency

TOEFL (IBT): 92 (reading:27;listening:18; speaking:22;writing:25)