Kai Li

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Research Interests

My research interest is in the area of computer vision. In particular, I am interested in 3D vision, specifically in exploiting images and point clouds to recover the structures of scenes. I am also interested in object detection.

Education

2014/9–Present **M.E. in** School of Remote Sensing and Information Engineering, Wuhan University
Advisor: Prof. Jian Yao
GPA: 3.5/4

2010/9–2014/7 **B.E. in** School of Remote Sensing and Information Engineering, Wuhan University
GPA: 3.4/4 (top 20%, gaining the privilege for exempting from taking the Graduate School Admission Exam)

Publications

Journals

[1] **Kai Li**, Jian Yao, and Xiaohu Lu. "Hierarchical Line Matching Based on Line-Junction-Line Structure Descriptor and Local Homography Estimation", **Neurocomputing**, Volume:, Issue:, Page(s):, 2015. (5-year impact factor: 2.295)

Conferences

[1] **Kai Li** and Jian Yao. "Joint Point and Line Segment Matching on Wide-Baseline Stereo Images", *IEEE Winter Conference of Applications of Computer Vision* (**WACV**), 2016. (Accepted rate**: 30%**)

[2] Xiaohu Lu, Jian Yao, **Kai Li**, and Li Li. "CannyLines: A Parameter-Free Line Segment Detector", *IEEE International Conference on Image Processing* (**ICIP**), 2015.

[3] Xiaohu Lu, Jian Yao, **Kai Li**, Jinge Tu, Li Li and Kao Zhang. "NETLines: Recovering Line-Networks via Gradient-Based Line Segments Refinement", *IEEE International Conference on Information and Automation* (**ICIA**), 2015.

[4] 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.

[5] Li Li, Jian Yao, Jinge Tu, Xiaohu Lu, and **Kai Li**. "Edge-Based Split-and-Merge Superpixel Segmentation", *IEEE International Conference on Information and Automation* (**ICIA**), 2015.

[6] **Kai Li**, Jian Yao, and Xiaohu Lu. "Robust Line Matching Based on Ray-Point-Ray Structure Descriptor", *Asian Conference on Computer Vision Workshop on Robust Local Descriptors for Computer Vision* (**ACCV-W**), 2014.

In Progress

[1] **Kai Li** and Jian Yao, Mengsheng Lu, Heng Yuan, Teng Wu, YinXuan Li. “Line Segment Matching: A Benchmark”, *IEEE Winter Conference of Applications of Computer Vision* (**WACV**), 2016. (under review)

[2] **Kai Li** and Jian Yao. “Line Segment Reconstruction through Coplanar Line Segment Clustering”, *International Society for Photogrammetry and Remote Sensing Congress* (**ISPRSC**). (in preparation)

Research Experience

2/2014-Present **Structure from motion.** RA. Advisor: Prof. Jian Yao.
- Working on developing algorithms for structure and motion based on line segments.
- Established a benchmark dataset for evaluating line segment matching algorithms.
- Designed several novel algorithms for line segment matching and detection.

10/2013-1/2014 **Building reconstruction based on point clouds.** RA. Advisor: Prof. Jian Yao
- Learned techniques for point clouds processing
- Investigated algorithms for building reconstruction based on point clouds.

12/2012-1/2013 **Pedestrian detection.** RA. Advisor: Prof. Jian Yao.
- Developed a software using Qt for selecting training samples for pedestrian detection.
- Investigated algorithms for pedestrian detection.

11/2012-6/2013 **Forest smokes and fires detection based on videos.** Project member. Advisor: Prof. Xiangyun Hu.
- Designed an algorithm for automatically detecting forest smokes and fires from videos. The algorithm exploits intensity and color information of smokes and fires, and background subtraction strategy to detect forest smokes and fires from videos.

Selected Awards

- **Excellent Graduate Student,** Wuhan University, 2015
- **Outstanding Undergraduate Thesis**, Hubei Province, 2015.
- **Best Undergraduate Thesis**, School of Remote Sensing and Information Engineering, Wuhan University, 2014 (rate: 1/240+).
- **Excellent Undergraduate Students**, Wuhan University, 2012.

Academic Services

Reviewer for IEEE Winter Conference on Applications of Computer Vision (**WACV**), 2015, 2016.

Talks

- "Robust Line Matching Based on Ray-Point-Ray Structure Descriptor", ACCV 2014 Workshop on Robust Local Descriptors for Computer Vision, Singapore, 11/2014.
- "Image Retrieval Based on Line Segments", Wuhan, 12/2014.
- "Line Segment Matching and Its Application on 3D Reconstruction", Wuhan, 6/2015.

Programming Skills

Languages: C, C++, Matlab, Java, VB, SQL, HTML, Android.
Libraries: OpenCV, Qt, MFC, GDAL, OSG.

Language Proficiency

TOEFL (IBT): 105 (Reading: 30, Listening: 27, Speaking: 20, Writing: 28).
GRE: 322 (Verbal: 152, Quantity: 170) + 3 (Analytical Writing).