Jingkai Zhou

PERSONAL DETAILS

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EDUCATION

Ph.D. Student in Software Engineering   2015 – Present
South China University of Technology

GPA:	3.72 / 4.0	**Rank:**	1

Advisor: Dr. Qiong Liu
Orientation: Computer Vision

B.Eng. in Software Engineering   2011 – 2015
South China University of Technology

Advisor: Dr. Qiong Liu
Orientation: Computer Vision
Thesis title: A combined similarity measure for multimodal image registration

PROFESSIONAL EXPERIENCE

Small Object Detection   2018 – Present

- Found that the small object relative scale (ORS), the small object resolution, and the object scale diversity between images are the main reasons for low accuracy of object detection.

- Proposed a novel Scale Adaptive Image Cropping method (SAIC) to enhance images and alleviate above three challenges, which resizes and crops images based on ORS level.

- Proposed a classification network to estimate ORS level which is trained by generated annotations.

- Adopted two methods to resize images with different ORS level. Images with the 'large' or 'medium' level are resized by bilinear interpolation, those with the 'small' level are enlarged by SRGAN.

- SAIC improves the accuracy of FPN from 26.04% to 35.69% (37.06% improvement relatively). Without any major modification, FPN trained/tested with SAIC achieved rank 3 on VisDrone 2018 DET challenge.

Crowd Counting   2017 – 2018

- Found that Multi-column Convolutional Neural Network (MCNN) can not integrate the density map of multi-scale crowds well.

- Proposed a novel Multi-path fusion strategy and an attention bypass to solve the integrate problem in MCNN.

- Developed a web and a mobile app for crowd counting. The developed apps are used in the cooperative company's commercial products.

Pedestrian Detection   2014 – 2017

- Established a FIR pedestrian detection benchmark dataset for nighttime pedestrian detection.

- Our dataset, the largest FIR pedestrian detection dataset so far, contains 11 hours-long video captured by a car driving through diverse traffic scenarios at speed less than 80 km/h. We annotated 211,011 frames for a total number of 477,907 bounding boxes around 7,659 unique pedestrians.

- Evaluated several detection methods on our dataset, including Faster-RCNN, RPN-BF, HOG-SVM and so on.

HONORS AND AWARDS

1. Honorable Mention in VisDrone Challenge, hold on ECCV 2020.

2. Honorable Mention in VisDrone Challenge, hold on ECCV 2018.

3. National Scholarship for Ph.D. students, 2018.

PUBLICATIONS

1. Hu Lin, **Jingkai Zhou**, Yanfen Gan, Chi-Man Vong, Qiong Liu*. "Novel up-scale feature aggregation for object detection in aerial images". *Neurocomputing*, 2020.

2. **Jingkai Zhou**, Chi-Man Vong, Qiong Liu*, Zhenyu Wang. "Scale Adaptive Image Cropping for UAV Object Detection". *Neurocomputing*, 2019.

3. Zhewei Xu,Jiajun Zhuang, Qiong Liu*, **Jingkai Zhou**, Shaowu Peng. "Benchmarking a Large-scale FIR Dataset for On-road Pedestrian Detection". *Infrared Physics & Technology*, 2019.

4. Zhewei Xu,Jiajun Zhuang, Qiong Liu*, **Jingkai Zhou**, Shaowu Peng. "Nighttime FIR Pedestrian Detection Benchmark Dataset for ADAS". *Chinese Conference on Pattern Recognition and Computer Vision*, 2018.

5. Feng Wu, Shaowu Peng, **Jingkai Zhou**, Qiong Liu*, Xiaojia Xie. "Object Tracking via Online Multiple Instance Learning with Reliable Components". *Computer Vision and Image Understanding*, 2018.

6. **Jingkai Zhou**, Qiong Liu*. "A Combined Similarity Measure for Multimodal Image Registration". *IEEE International Conference on Imaging Systems and Techniques*, 2015.