

Xiaogang Jia

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Education

Harbin Engineering University(HEU)

Harbin, China

Bachelor of Engineering in Automation, School of Automation

Sep. 2015 - Jun. 2019

- GPA: 91.11/100 Ranking: 15/285
- Courses: *Linear Algebra and Analytic Geometry(97/100), Calculus(94/100), Probability and Mathematical Statistics(94/100), Complex Functions and Integral Transforms(97/100), Automatic Control Theory(95/100), Digital Signal Processing(95/100) etc.*

Harbin Institute of Technology(HIT)

Harbin, China

Master of Engineering in Control Engineering, School of Astronautics

Sep. 2019 - PRESENT

- Courses: *Matrix Analysis (96/100), Machine Vision(89.7/100), Data Analysis and Feature Extraction(88/100) etc.*

University of California, Berkeley

Berkeley, USA

Remote Research Assistant, Mechanical Systems Control Lab

Jun. 2020 - PRESENT

- Research Topics: trajectory prediction for vehicle/pedestrian/cyclist

Standard Tests

- TOEFL: Reading(29), Listening(24), Speaking(22), Writing(25), Total(100)

Publications

- **Xiaogang Jia**, Xianqiang Yang, Huijun Gao. A Modified CenterNet for Crack Detection of Sanitary Ceramics. IECON 2020 - The 46th Annual Conference of the IEEE Industrial Electronics Society.(submitted)
- Zhihao Zhang, Xianqiang Yang, **Xiaogang Jia**. Scale-Adaptive NN-based Similarity for Robust Template Matching. IEEE Transactions on Instrumentation and Measurement.(submitted)

Research Experiences

Behavior Prediction for autonomous driving

Jun. 2020 - PRESENT

Research Assistant, Mechanical Systems Control Lab, UC Berkeley

- Modified **Social-Gan** and **Social-STGCNN** to complete the behavior prediction in highly interactive driving scenarios.
- Both methods were tested on the INTERACTION Dataset and the results have been presented in **CVPR 2020** Workshop organized by Waymo: Scalability in Autonomous Driving.
- In the regular track competition, the method named sgan3 achieved a result of ADE=0.55, FDE=1.62, MON=0.22. The metric of MON ranked the **1st**.

Object Detection in Aerial Images

Feb. 2020 - PRESENT

Main Researcher, Machine Vision Lab, HIT

- Propose a **point-based** network to localize objects in a low-resolution feature map and generate high-quality clusters.
- Both original images and cropped images are processed by our detector. The detector is based on **CenterNet** and I implement it with **FPN** and multi-scale pattern. Then the predicted bounding boxes are merged by standard **NMS**.
- The detector is tested on **VisDrone2019**. At present, the model achieves an AP of 28.03% on the validation set. The volume of the model is only 150Mb.

Defect Detection for Sanitary Ceramics(2018YFB1308404)

Feb. 2020 - May. 2020

Advisor: Prof. Xianqiang Yang, Prof. Huijun Gao, Machine Vision Lab, HIT

- Collected enough images of Sanitary Ceramics which consist of varied defects.
- Proposed a modified **CenterNet** based on **ResNet18**(including changing the main structure and using an adaptive feature fusion method) to complete full-resolution, robust and real-time detection.
- The detection **AP** of Cracks can achieve 96.16% at present.

License Plate Recognition in Natural Scenes

Nov. 2018 - Jun. 2019

Advisor: Prof. Xianqiang Yang, Prof. Huijun Gao, Machine Vision Lab, HIT

- Collected car images from cameras and Web Crawler.
- Used **YOLOv2** to detect all cars in the captured images.
- Proposed a novel **CNN** to predict a set of **affine transformation** parameters, which were used to extract the areas of License Plates and correct the distorted License Plates.
- Set up the dataset for Plate Characters(except for the collected images, there were also many synthesized License Plates).
- Simplified the standard **YOLOv2** to perform **character detection**(here the character localization and recognition were fused into the detection pattern).

Intelligent Monitoring System for Conveyor Belt in Coal Industry

Apr. 2019 - Dec. 2019

Advisor: Prof. Xianqiang Yang, Prof. Huijun Gao, Machine Vision Lab, HIT

- Implemented the detection for the speed of the conveyor belt based on **SURF** feature detector.
- Modified the original **YOLOv3** to perform the detection of workers, smoke and fire.
- Detected the area of the coal based on **Mask-RCNN** to make sure the normal operation of conveying coal.
- Used **template matching** to detect if the coal piling exceeds the defined height.
- Used multiple threads to pull together all subtasks and implemented the communication between **Python** and **C++**(SURF and template matching were realized in OpenCV based on C++ and other deep CNNs were realized using Python).

Honors & Scholarships

- 2017 **First Prize Scholarship for Bachelor Students(8%)**, Harbin Engineering University
 Merit Student, Harbin Engineering University
- 2016 **Second Prize of National Undergraduate Electronic Design Contest**, Heilongjiang Province

Skills & Others

- Programming** Python, C/C++, Latex
- Technical** Experienced with Opencv, PyTorch, Keras, TensorFlow, ROS under Ubuntu operating system
- Deep Learning** In depth knowledge of CNN-based Object Detection and Instance Segmentation
- Practice** Reproduced CornerNet, CenterNet, FPN, Scale-Aware training, Feature Slective Module.
- Future study** Excited to do other interesting computer vision research
- Hobbies** Basketball, DC, Harry Potter