Xuan ZHU

Sichuan University, 610025, Shuangliu District, Chengdu, P.R. China

Email: zhuxuan@westlake.edu.cn/ j_zhxxx@163.com; Mobile: +86(0)18202860262

Education

RA in SCILab — Westlake University — 2022.6-Present

Supervisor: Xin Yuan — Research Direction: Video Snapshot Compressive Image

M. S. in Aeronautical and Astronautical Science and Technology — Sichuan University — 2019.9-2022.6

Supervisor: Wei Li — Research Direction: Video Surveillance Technology for Airport Scene

B. S. in Mechanical Engineering — Hainan University — 2015.9-2019.7

Major: Mechanical and Electronic Engineering

Grade

Bachelor overall

Rank: **5** / 71 (Mechanical and Electronic Engineering) — GPA: **3.70** / 4.0 (**88.27**/ 100) — 2015.9-2019.6

Master overall

Rank: NA / NA — GPA: **3.86** / 4.0 (**88.67**/ 100) — 2019.9-2020.6

Research Experience

• Project Research Experience

1. Research on Video Snapshot Compressive Image 2022.6-Present

I investigated in SCI field and reproduced relevant mainstream algorithms. Then, the results are compared and analyzed. At present, by analysis results, I constructed a new network and tested performance. According to results, I continue to modify network. For low-level image tasks such as image denoising and super-resolution, I also investigated and reproduced some recent paper and algorithms. At the same time, I learned meta-learning, active learning and self-supervised.

2. Research on Airport Moving Object Detection, Tracking and Matching Technology Based on Multi-feature Fusion 2020.6-2022.5

In this project task, I am mainly responsible for the small object detection in airport scenes. Firstly, the research was carried out according to the research background. Then I made the airport video dataset according to the demand. Then object characteristics are analyzed. Meanwhile, small object detection problems of the current research are summarized. Next, combining above two points, I clarified the difficulties and initial solution of this subject and proposed corresponding technical routes. Finally, the reasons were concluded through experiments, and the technical routes was gradually optimized and adjusted. Besides, during this research, I need to preliminary process the images, so I learned a variety of traditional methods of image processing.

3. Cross-view Multi-Object Intelligent Tracking Technology in Airport Flight Area 2019.9-2022.5

In this project, I participated in the related research work of moving object detection based on deep learning. Among them, I investigated moving object detection algorithms, including VIBE, frame difference method and optical flow method, which laid a theoretical foundation for the current research. Meanwhile I strengthened the understanding for moving object detection algorithms.

• Other Research Experience

1. Remote Sensing Image Intelligent Detection and Recognition 2021.10

I am mainly responsible for data input and model optimization. Since the format of the data set is different from that of the commonly used detection data set such as VOC and COCO, it is necessary to convert the data set into a general format for input, and I optimize the baseline model according to the characteristics of the data set.

2. "Huawei Cup" The 17th Chinese Postgraduate Mathematical Modeling Competition 2020.9.17-2020.9.21

The topic we chose was visibility estimation and prediction. I was mainly responsible for determining the problem-solving ideas and the establishment of mathematical models. For example, the transmittance was calculated by the traditional dehazing algorithm, and the depth of a point in the image was estimated by using the dehazing algorithm and depth estimation method in deep learning, so as to calculate the visibility of the image. Finally, the time of fog dissipation was predicted.

3. "Huawei Cup" The 2nd Chinese Postgraduate Artificial Intelligence Innovation Competition 2020.6-2020.12

I was mainly responsible for the debugging of the data set. In order to prove that the proposed algorithm had strong generalization ability, it accurately estimated the depth of different scenes. Therefore, we developed a set of data sets, including field scenes, urban scenes, etc. It made up for the lack of current large scene data sets in depth estimation.

4. "Flying shark Cup" The 6th Chinese Postgraduate Future Aircraft Innovation Competition 2020.6-2020.11

I was responsible for the debugging of algorithms on embedded devices. We transplanted the designed algorithm to the onboard embedded device for real-time inference. Therefore, we had been continuously optimizing the network, pruning, and reducing the model. Finally, model had achieved high-speed real-time inference on airborne equipment.

5. Optical Machine System 2017.6-2018.6

The three-dimensional images of the optical-mechanical module and optical-mechanical system were constructed, and I participated in the research of imaging on the three-dimensional surface.

Publication List

1. **Zhu, X.**, Liang, B., Fu, D., Huang, G., Yang, F., Li, W.: Airport Small Object Detection Based on Feature Enhancement [J]. IET Image Process. 16, 2863–2874 (2022). (CCF-C)

2. The second paper is revised. (First Author)

3. Hai Jiang, **Xuan Zhu**, Ren Yang, Yutong Hao, Fengzhu Zou, Fang Lin and Songchen Han. R2RNet: Low-light. Image Enhancement via Real-low to Real-normal Network. arXiv preprint arXiv: 2106.14501, 2021.

4. Fan Yang, Xiangtong Wang, **Xuan Zhu**, Binbin Liang, Wei Li. Relation-Based Holistic-Partial Feature Learning Network for Video-Based Person Re-identification [J]. Neurocomputing, 2022, 488: 424-435. (CCF-C)

5. Fan Yang, Wei Li, Binbin Liang, Songchen Han, **Xuan Zhu**. Multi-stage Attention Network for Video-based Person Re-identification [J]. IET Comput.Vis. 16 (5), 445–455 (2022). (CCF-C)

6. Fuhong Cai, Jie Chen, Chunling Zhou, **Xuan Zhu**, Sailing He. Exploratory Study on Light-sheet Based Three-Dimensional Surface Topography. Progress In Electromagnetics Research, 2018 (161): 11-18.

Patents

1. A straw cutting, laying and collecting mechanism. CN 201720446745.X. Mao Lin, Yuyang Zhao, Zhiyang Jin, Chaochao Dong, Riming Xu, **Xuan Zhu**.

2. A vertical green walnut peeling machine. CN 201720446951.0. Mao Lin, Chaochao Dong, Zhiyang Jin, Yuyang Zhao, **Xuan Zhu**, Wei Li.

Competitions

1. **Second Prize** in “Huawei Cup” The 17th Chinese Postgraduate Mathematical Modeling Competition.
2. **Third Prize** in “Flying shark Cup” The 6th Chinese Postgraduate Future Aircraft Innovation Competition.
3. **Third Prize** in “Huawei Cup” The 2nd Chinese Postgraduate Artificial Intelligence Innovation Competition.

Learning Experience

1. Lesson 1 and Lesson 2 of Andrew Ng’s Deep Learning Course, Online.
2. Games 101 and Games 204, Online. (Learning)
3. Nov. 2020 to Mar. 2022, Wisesoft Co., Ltd.: Algorithm Intern.

Skills

1. Coding Skills: Python, Matlab, PyTorch.
2. Drawing Skills: Auto CAD, Pro/Engineering.
3. Circuit Drawing: Protues.
4. English: IELTS: 6.0 (L: 5.5, R: 7.0, S: 5.5, W:5.5) in Aug. 2021

Selected Honors

- 2015-2016, Second-Class Scholarship
- 2015-2016, Excellent Student
- 2015-2016, Outstanding Student Leader
- 2016-2017, The National Encouragement Scholarship
- 2016-2017, Excellent Student
- 2016-2017, Outstanding Student Leader
- 2017-2018, The National Encouragement Scholarship
- 2019, Outstanding Graduate
- 2019-2021, First-Class Scholarship
- 2021-2022, Second-Class Scholarship