Jie Yang

+86 138-4680-5160 gunshi3@hnu.edu.cn Changsha
13846805160 https://gunshi3.github.io/

EDUCATION BACKGROUND

Hunan University Sept. 2019 - Jun. 2023
Faculty: School of Computer Science and Electronic Engineering
Major: Computer Science and Technology
GPA: 3.81/4.0 Ranking: 8/225

RESEARCH EXPERIENCES

Vehicle Detection and Tracking System based on Deep Learning Sept. 2021 - Jan. 2022
Introduction: The existing vehicle detection and tracker is difficult to meet the requirements of accuracy and real-time performance. In view of the above problems, this project designed a lightweight vehicle detection and tracking system based on deep learning.

- Improved network structure, adding attention mechanism module SELayer, depthwise separable convolutional layer Depthwise SeparableConv, GhostBottleneck (from CVPR 2020), using multi-scale feature map to enhance the network's ability to detect small targets;
- Used the Focal loss loss function, to compare the localization loss calculation methods of IoU, GIoU, DIoU, and CIoU through experiments, and selected the optimal method;
- The trajectory scoring mechanism was introduced, replaced the NMS module with the Soft-NMS module, and used prediction to make up for missed detections, the improved algorithm was superior to the original algorithm in many evaluation indicators.

Link: https://github.com/gunshi3/Yolov5_DeepSort_Pytorch

Abnormal garbage visual detection system based on 5G cloud platform (University Student Innovation Project in Hunan Province) Jun. 2021 - May. 2022
Introduction: This project was based on the currently popular object detection algorithm YOLOv5, combined with the attention mechanism, to develop an accurate detection technology for foreign objects that was more suitable for garbage dumps.

- Added CBAM, Swin Transformer (from ICCV 2021) and other modules to improve the detection accuracy of small targets in large and cluttered backgrounds;
- Designed ablation experiments to explore the influence of each part of the network on the detection accuracy.

The 17th National College Student Smart Car Competition Mar. 2022 - Jun. 2022
Introduction: The competition requires the realization of a deep learning model that can identify road obstacles and traffic lights and their specific locations and categories. Our team uses PP-YOLOE as the baseline and makes improvements based on it. The team currently has a score of 10/189.

- Learned PP-YOLOE's advanced loss function (DFL and VFL), activation function (SiLU), and Task Alignment Learning technologies;
- Using convolution channel clipping, knowledge distillation, etc. model compression technology reduced model volume while ensuring model accuracy;
- Tried TTA, multi-process data preprocessing and other means to improve model accuracy and speed.

Link: https://aistudio.baidu.com/aistudio/projectdetail/3665227

SKILLS

- English proficiency: CET-6 441
- Data analysis and programming: C, C++, Python, Java, PyTorch, Numpy, Linux, MySQL

AWARDS

- National Scholarships Oct 2020
- National Scholarships Oct 2020
- University Merit Student of HNU Oct 2020
- Outstanding Communist Youth League cadres May 2021
- National Inspirational Scholarships Oct 2021
- Huawei University Scholarship Mar 2022