Helwan University
Faculty of Computers and Artificial Intelligence
Computer Science Department

2021/2022

CS 395 Selected Topics in CS-2

Research Project

Team No. 38

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Paper details

Citation

A. Kumar, S. S. S. S. Reddy and V. Kulkarni, "An Object Detection Technique For Blind People in Real-Time Using Deep Neural Network," 2019 Fifth International Conference on Image Information Processing (ICIIP), 2019, pp. 292-297, doi: 10.1109/ICIIP47207.2019.8985965.

Dataset

Pascal VOC and COCO datasets

Implemented algorithm:

improved SSD object detection

Results

Table I. represents the results on Pascal VOC and COCO test.

System Model	mAP	FPS	No. of Boxes	Resolution
F-CNN	73.2	7	6000	1000×600
YOLO	66.4	155	98	448×448
SSD512	76.8	19	24564	512×512
SSD300	74.3	46	8732	300×300
Proposed Approach	78.68	89	5988	1024×1024

Our selected dataset

Dataset name: Obstacle Dataset OD

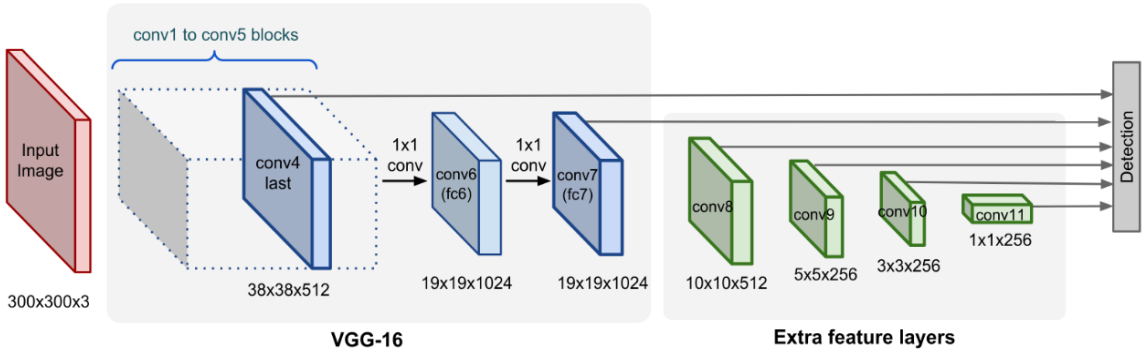
Link:https://github.com/TW0521/Obstacle-D

Dataset description:

-JPEGImages
-Annotations
-ImageSets
  --Main
    ---train.txt
    ---test.txt
    ---val.txt
According to pictures and labels,as follows.
    img-train for training Contains 5066 images ann-train
    img-test for test Contains 1583 images ann-test
    img-val for validation Contains 1266 images ann-val

Classes
["stop_sign","person","bicycle","bus","truck","car","motorbike","reflective_cone","ashcan","warning_column","spherical_roadblock","pole","dog","tricycle","fire_hydrant"]

Implementation Details



Hyperparameters:

- Learning Rate: 0.001
- Decay lr at: [0.7, 0.85]
- Weight decay: 5e-4
- Number of train Iterations: 2500
- Input image size: (300X300X3)
- Use pretrained vgg16 weights
- Batch size: 16
- Epochs = number of train iteration // dataloader.length
- Batch normalization flag
- Optimizer: SGD

Testing results:

mAP: 60%