

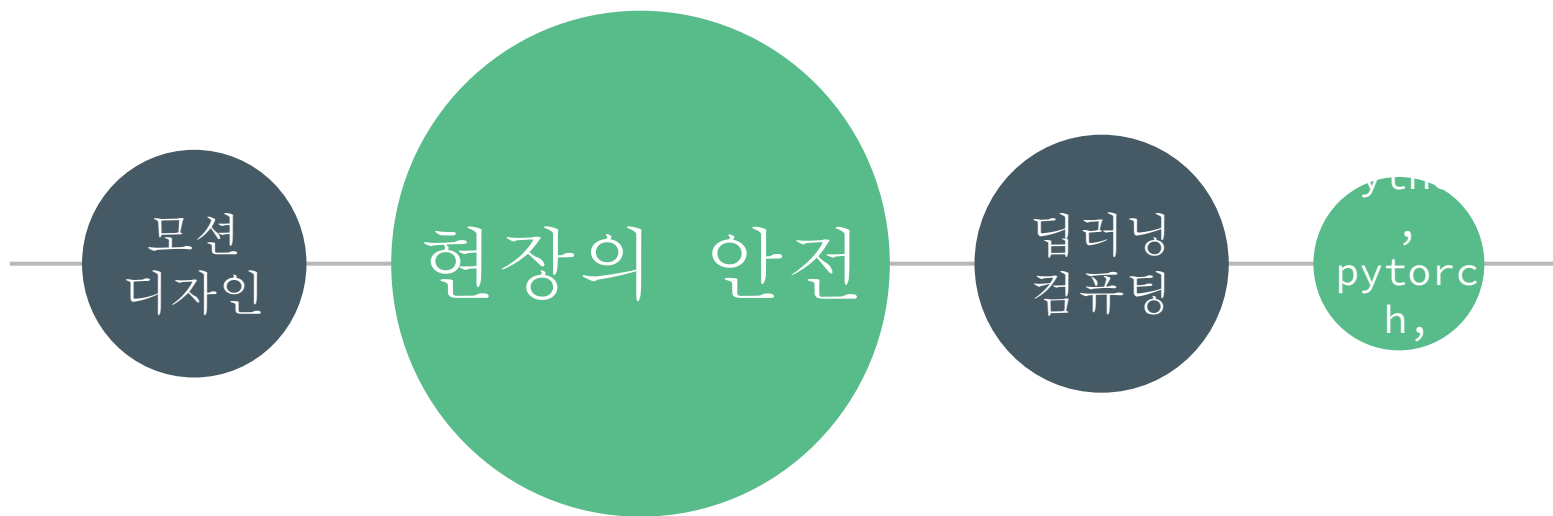
비전 AI 직접 학습 시키기

YOLOv7 을 통한 직접 학습



학습 목표

- 산업 안전을 위해 보호모, 마스크 착용 여부등 확인하는 실시간 객체인식 프로그램 개발




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SNEHIL SANYAL · UPDATED 7 MONTHS AGO

21New NotebookDownload (216 MB)



Data CardCode (5)Discussion (0)

About Dataset

4,764 workers died on the job in 2020 (3.4 per 100,000 full-time equivalent workers). Workers in transportation and material moving occupations and construction and extraction occupations accounted for nearly half of all fatal occupational injuries (47.4 percent), representing 1,282 and 976 workplace deaths, respectively.

Occupational Safety and Health Administration (US Department of Labour)

Introduction

There have been many accidents in construction sites due to lack of safety measures. A major reason for this has been workers not wearing Personal Protective Equipments (PPE) for their safety. Detecting PPEs become very crucial for the continuous monitoring of worker safety.

Dataset collection

Usability ⓘ
10.00

License
Attribution 4.0 International (CC ...)

Expected update frequency
Quarterly

Tags

Beginner

Data Visualization

Public Safety

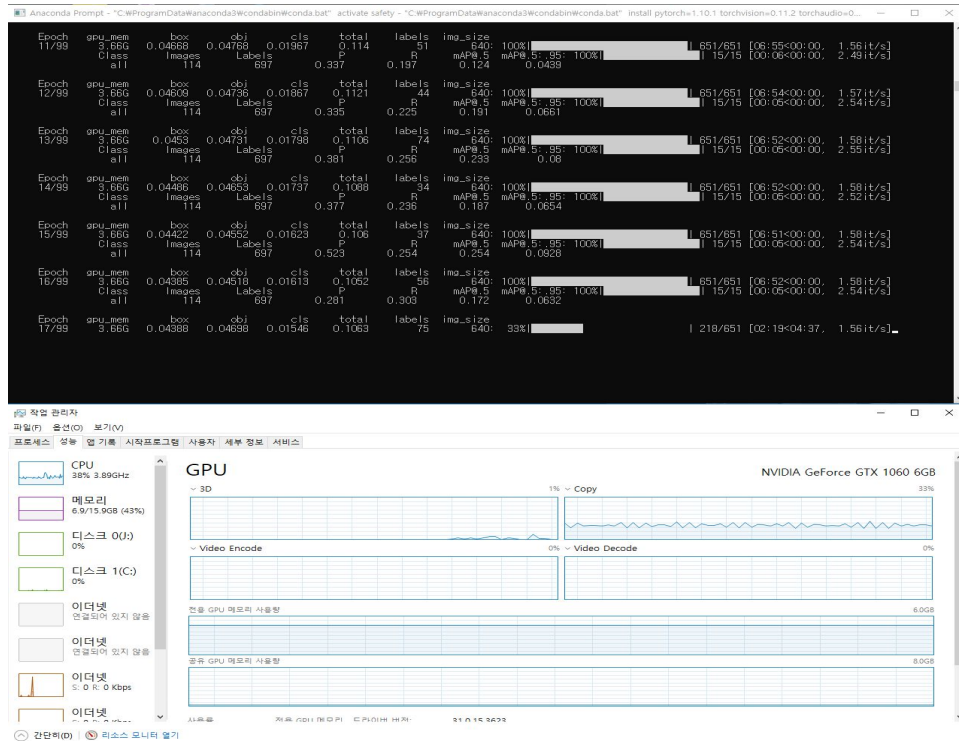
Object DetectionYOLO

- 사용가능한 데이터 확보
- 데이터 라벨링 확인
- **Json -> yolov7 정규화**
- 결측치 처리
- **data.yaml 내용 수정하기**

데이터 출처

[Construction Site Safety Image Dataset Roboflow](https://www.kaggle.com/datasets/roboflow/construction-site-safety-image-dataset)
(kaggle.com)

데이터 추출 및 학습



- batch-size 32
- epochs 100
- img 640 640
- -workers 4

데이터 학습 과정

최종 결과

```
(safety) J:\source\yolov7\python test.py --weights safety_best.pt --data data_safety/test.yaml --img 640 --task test
Namespace(weights=['safety_best.pt'], data='data_safety/test.yaml', batch_size=32, img_size=640, conf_thres=0.001, iou_thres=0.65, task='test', device='', sing
le_cls=False, augment=False, verbose=False, save_txt=False, save_hybrid=False, save_conf=False, save_json=False, project='runs/test', name='exp', exist_ok=False,
e_no_trace=False, v5_metric=False)
YOLOv7 v0.1-126-g84932d7 torch 1.10.1 CUDA:0 (NVIDIA GeForce GTX 1060 6GB, 6143.75MB)

Fusing layers...
RepConv.fuse_repvgg_block
RepConv.fuse_repvgg_block
RepConv.fuse_repvgg_block
IDetect.fuse
C:\Users\User\Anaconda\envs\safety\lib\site-packages\torch\functional.py:445: UserWarning: torch.meshgrid: in an upcoming release, it will be required to pass th
e indexing argument. (Triggered internally at ..\aten\src\ATen/native\TensorShape.cpp:2157.)
  return _VF.meshgrid(tensors, **kwargs) # type: ignore[attr-defined]
Model Summary: 314 layers, 36530318 parameters, 6194944 gradients, 103.3 GFLOPS
Convert model to Traced-model...
traced_script_module saved!
model is traced!

test: Scanning 'J:\source\yolov7\data_safety\test\labels' images and labels... 82 found, 0 missing, 8 empty, 0 corrupted: 100%|██████████| 3/3 [00:00<00:00, 149.92
test: New cache created: J:\source\yolov7\data_safety\test\labels.cache

```

Class	Images	Labels	P	R	mAP@.5	mAP@.5: .95	100%
all	82	760	0.866	0.879	0.744	0.393	
{0: 'Hardhat'}	82	110	0.989	0.846	0.904	0.531	
{1: 'Mask'}	82	28	0.983	0.873	0.739	0.423	
{2: 'NO-Hardhat'}	82	41	0.82	0.585	0.608	0.247	
{3: 'NO-Mask'}	82	79	0.804	0.671	0.758	0.327	
{4: 'NO-SafetyVest'}	82	90	0.938	0.668	0.752	0.374	
{5: 'Person'}	82	174	0.805	0.71	0.769	0.357	
{6: 'Safety Cone'}	82	92	0.803	0.4	0.443	0.182	
{7: 'Safety Vest'}	82	61	0.953	0.808	0.872	0.475	
{8: 'machinery'}	82	44	0.893	0.795	0.855	0.547	
{9: 'vehicle'}	82	41	0.788	0.634	0.742	0.368	

```
Speed: 74.4/1.5/75.9 ms inference/NMS/total per 640x640 image at batch-size 32
C:\Users\User\Anaconda\envs\safety\lib\site-packages\seaborn\matrix.py:260: FutureWarning: Format strings passed to MaskedConstant are ignored, but in future may
error or produce different behavior
  annotation = ("{}: " + self.fmt + "}")
Results saved to runs\test\exp
```



높은 성능으로 안전장비 착용 여부 확인