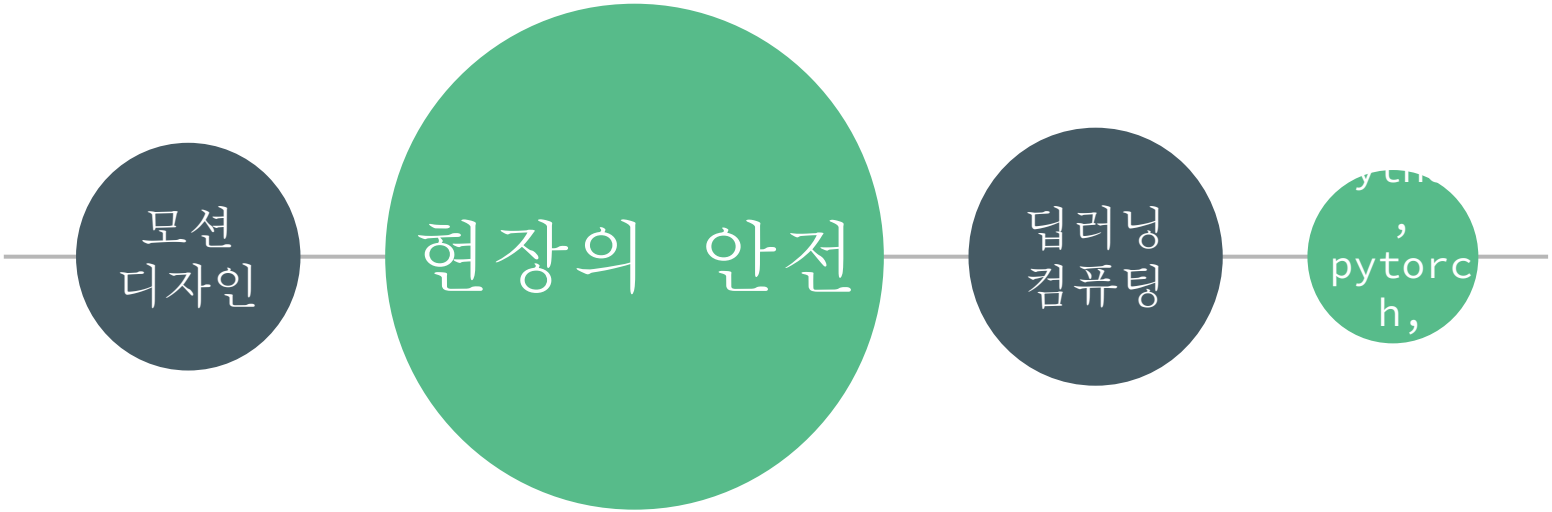
비전 AI 직접 학습 시키기

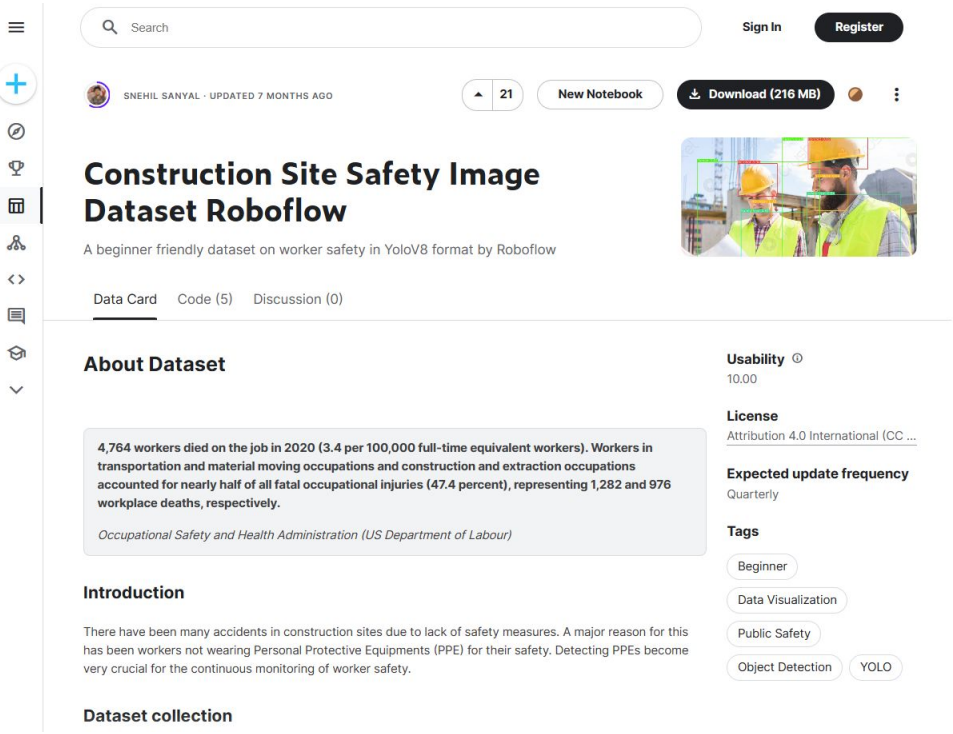
YOLOv7 을 통한 직접 학습

학습 목표

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



학습 데이터

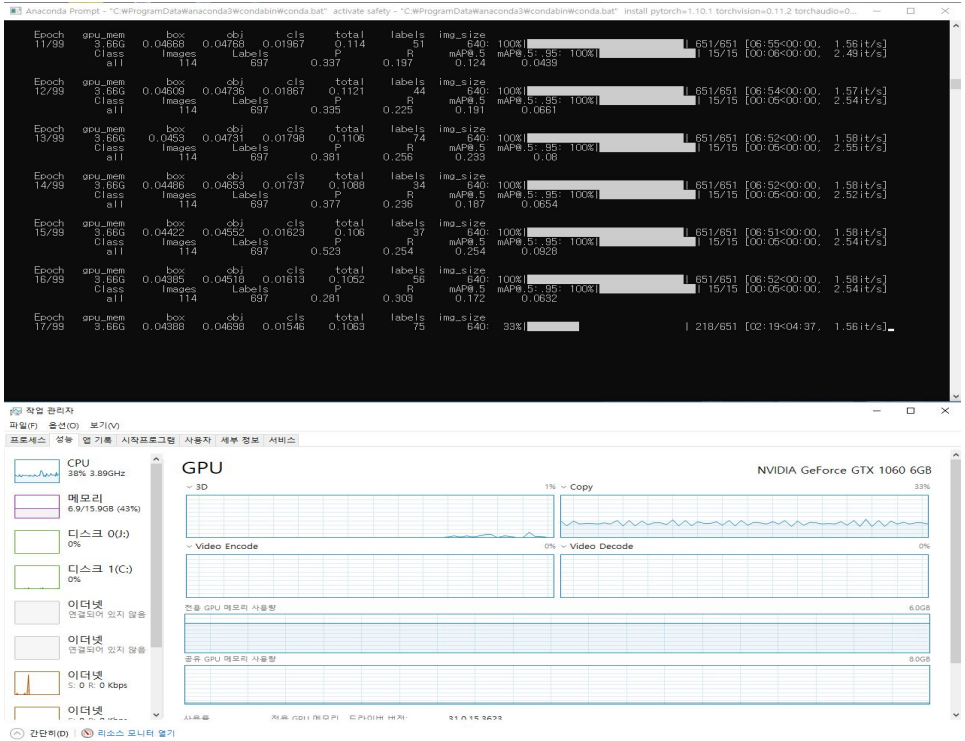


- 사용가능한 데이터 확보
- 데이터 라벨링 확인
- **Json -> yolov7** 정규화
- 결측치 처리
- **data.yaml** 내용 수정하기

데이터 출처

Construction Site Safety Image Dataset Roboflow (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=Fals
e, no_trace=False, v5_metric=False)
YOLOR  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₩.conda₩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%|| 82/82 [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%|| 3/3 [00:08<00:00,  2.69s/it]
                 all          82         760       0.866       0.679       0.744       0.383
     {0: 'Hardhat'}          82         110       0.989       0.846       0.904       0.531
        {1: 'Mask'}          82          28       0.863       0.673       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       0.809         0.4       0.443       0.182
  {7: 'Safety Vest'}          82          61       0.953       0.803       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₩.conda₩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 + "}").format(val)
Results saved to runs₩test₩exp
```

높은 성능으로 안전장비 착용 여부 확인