

✓ Roboflow에서 가져온 데이터셋 사용해보기

✓ 1.데이터셋

- 데이터셋 라이브러리 설치하기

```
!pip install roboflow
```

```
Requirement already satisfied: roboflow in /usr/local/lib/python3.10/dist-packages (1.1.27)
Requirement already satisfied: certifi==2023.7.22 in /usr/local/lib/python3.10/dist-packages (from roboflow) (2023.7.22)
Requirement already satisfied: chardet==4.0.0 in /usr/local/lib/python3.10/dist-packages (from roboflow) (4.0.0)
Requirement already satisfied: cycler==0.10.0 in /usr/local/lib/python3.10/dist-packages (from roboflow) (0.10.0)
Requirement already satisfied: idna==2.10 in /usr/local/lib/python3.10/dist-packages (from roboflow) (2.10)
Requirement already satisfied: kiwisolver==1.3.1 in /usr/local/lib/python3.10/dist-packages (from roboflow) (1.4.5)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.10/dist-packages (from roboflow) (3.7.1)
Requirement already satisfied: numpy>=1.18.5 in /usr/local/lib/python3.10/dist-packages (from roboflow) (1.25.2)
Requirement already satisfied: opencv-python-headless==4.8.0.74 in /usr/local/lib/python3.10/dist-packages (from roboflow) (4.8.0.74)
Requirement already satisfied: Pillow>=7.1.2 in /usr/local/lib/python3.10/dist-packages (from roboflow) (9.4.0)
Requirement already satisfied: python-dateutil in /usr/local/lib/python3.10/dist-packages (from roboflow) (2.8.2)
Requirement already satisfied: python-dotenv in /usr/local/lib/python3.10/dist-packages (from roboflow) (1.0.1)
Requirement already satisfied: requests in /usr/local/lib/python3.10/dist-packages (from roboflow) (2.31.0)
Requirement already satisfied: six in /usr/local/lib/python3.10/dist-packages (from roboflow) (1.16.0)
Requirement already satisfied: urllib3>=1.26.6 in /usr/local/lib/python3.10/dist-packages (from roboflow) (2.0.7)
Requirement already satisfied: tqdm>=4.41.0 in /usr/local/lib/python3.10/dist-packages (from roboflow) (4.66.2)
Requirement already satisfied: PyYAML>=5.3.1 in /usr/local/lib/python3.10/dist-packages (from roboflow) (6.0.1)
Requirement already satisfied: requests-toolbelt in /usr/local/lib/python3.10/dist-packages (from roboflow) (1.0.0)
Requirement already satisfied: python-magic in /usr/local/lib/python3.10/dist-packages (from roboflow) (0.4.27)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib->roboflow) (1.2.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib->roboflow) (4.51.0)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib->roboflow) (24.0)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib->roboflow) (3.1.2)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests->roboflow) (3.3.2)
```

- 데이터셋 라이브러리 불러오기

```
from roboflow import Roboflow
```

- 데이터셋 설치하기
 - [링크](#)

```
# 링크에서 YOLO8로 선택 다운 디렉트 한 후 복사 붙여넣기
```

```
rf = Roboflow(api_key="vZV4ItqyYGeuNdaKbFa") # 사용자 및 선택한 데이터 셋에 따라 다름
project = rf.workspace("ilyes-talbi-ptwsp").project("futbol-players")
version = project.version(7)
dataset = version.download("yolov8")
```

```
loading Roboflow workspace...
loading Roboflow project...
[WARNING] we noticed you are downloading a `yolov8` datasets but you don't have `ultralytics` installed. Roboflow `deploy` supports only models trai
Downloading Dataset Version Zip in futbol-players-7 to yolov8:: 100%|██████████| 3610/3610 [00:00<00:00, 14441.69it/s]
```

```
Extracting Dataset Version Zip to futbol-players-7 in yolov8:: 100%|██████████| 338/338 [00:00<00:00, 8996.83it/s]
```

✓ 2.모델링

- 모델링 라이브러리 설치하기

```
!pip install ultralytics
```

```
Successfully installed nvidia-cublas-cu12-12.1.3.1 nvidia-cuda-cupti-cu12-12.1.105 nvidia-cuda-nvrtc-cu12-12.1.105 nvidia-cuda-runtime-cu12-12.1.105
```

- 모델링 라이브러리 불러오기

```
from ultralytics import YOLO, settings
```

- 데이터셋 경로 수정 & YAML 파일 경로 수정

```
settings
```

```
{'settings_version': '0.0.4',
 'datasets_dir': '/content/datasets',
 'weights_dir': 'weights',
 'runs_dir': 'runs',
 'uuid': '569f3ba64b326db489132663f79cd37279811de477381b83ac131e6cdd129cbb',
 'sync': True,
 'api_key': '',
 'openai_api_key': '',
 'clearml': True,
 'comet': True,
 'dvc': True,
 'hub': True,
 'mlflow': True,
 'neptune': True,
 'raytune': True,
 'tensorboard': True,
 'wandb': True}
```

```
settings['datasets_dir'] = '/content/'
settings.update()
settings
```

```
{'settings_version': '0.0.4',
 'datasets_dir': '/content/',
 'weights_dir': 'weights',
 'runs_dir': 'runs',
 'uuid': '569f3ba64b326db489132663f79cd37279811de477381b83ac131e6cdd129cbb',
 'sync': True,
 'api_key': '',
 'openai_api_key': '',
 'clearml': True,
 'comet': True,
 'dvc': True,
 'hub': True,
 'mlflow': True,
 'neptune': True,
 'raytune': True,
 'tensorboard': True,
 'wandb': True}
```

```
import yaml
```

```
with open('/content/futbol-players-7/data.yaml', 'r+') as f:
    film = yaml.load(f, Loader=yaml.FullLoader)
    # display(film)
    film['train'] = './train/images/'
    film['val'] = './valid/images/'
```

```
with open('/content/futbol-players-7/data.yaml', 'w') as f:
    yaml.dump(film, f)
```

> 1) 데이터셋에서 제공하는 모델 사용하기

[] 4 숨겨진 셀 4개

> 2) 모델 구조만 빌려와서 사용해보기(권장하지 않음)

[] 4 숨겨진 셀 7개

✓ 3) 모델 구조에 사전 학습 가중치도 가져와서 사용해보기

- 모델 구조 및 사전 학습 가중치 선택하기

```
model_transfer = YOLO(model='yolov8n.pt', task='detect')
# model_transfer = YOLO()
```

Downloading <https://github.com/ultralytics/assets/releases/download/v8.1.0/yolov8n.pt> to 'yolov8n.pt'...
100%|██████████| 6.23M/6.23M [00:00<00:00, 86.2MB/s]

- 모델 학습하기

```
model_transfer.train(model='/content/yolov8n.pt',
                    data='/content/futbol-players-7/data.yaml',
                    epochs=10,
                    patience=5,
                    seed=2024,
                    pretrained=True,
                    )
```

0.14114,	0.14214,	0.14314,	0.14414,	0.14515,	0.14615,	0.14715,	0.14815,	0.14915,	0.15015,	0.15115,	0.15215,	0.15315,
0.15415,	0.15516,	0.15616,	0.15716,	0.15816,	0.15916,	0.16016,	0.16116,	0.16216,	0.16316,	0.16416,	0.16517,	0.16617,
0.16617,	0.16717,	0.16817,	0.16917,	0.17017,	0.17117,	0.17217,	0.17317,	0.17417,	0.17518,	0.17618,	0.17718,	0.17818,
0.17818,	0.17918,	0.18018,	0.18118,	0.18218,	0.18318,	0.18418,	0.18519,	0.18619,	0.18719,	0.18819,	0.18919,	0.19019,
0.19019,	0.19119,	0.19219,	0.19319,	0.19419,	0.1952,	0.1962,	0.1972,	0.1982,	0.1992,	0.2002,	0.2012,	0.2022,
0.2022,	0.2032,	0.2042,	0.20521,	0.20621,	0.20721,	0.20821,	0.20921,	0.21021,	0.21121,	0.21221,	0.21321,	0.21421,
0.21421,	0.21522,	0.21622,	0.21722,	0.21822,	0.21922,	0.22022,	0.22122,	0.22222,	0.22322,	0.22422,	0.22523,	0.22623,
0.22623,	0.22723,	0.22823,	0.22923,	0.23023,	0.23123,	0.23223,	0.23323,	0.23423,	0.23524,	0.23624,	0.23724,	0.23824,
0.23824,	0.23924,	0.24024,	0.24124,	0.24224,	0.24324,	0.24424,	0.24525,	0.24625,	0.24725,	0.24825,	0.24925,	0.25025,
0.25025,	0.25125,	0.25225,	0.25325,	0.25425,	0.25526,	0.25626,	0.25726,	0.25826,	0.25926,	0.26026,	0.26126,	0.26226,
0.26226,	0.26326,	0.26426,	0.26527,	0.26627,	0.26727,	0.26827,	0.26927,	0.27027,	0.27127,	0.27227,	0.27327,	0.27427,
0.27427,	0.27528,	0.27628,	0.27728,	0.27828,	0.27928,	0.28028,	0.28128,	0.28228,	0.28328,	0.28428,	0.28529,	0.28629,
0.28629,	0.28729,	0.28829,	0.28929,	0.29029,	0.29129,	0.29229,	0.29329,	0.29429,	0.2953,	0.2963,	0.2973,	0.2983,
0.2983,	0.2993,	0.3003,	0.3013,	0.3023,	0.3033,	0.3043,	0.30531,	0.30631,	0.30731,	0.30831,	0.30931,	0.31031,
0.31031,	0.31131,	0.31231,	0.31331,	0.31431,	0.31532,	0.31632,	0.31732,	0.31832,	0.31932,	0.32032,	0.32132,	0.32232,
0.32232,	0.32332,	0.32432,	0.32533,	0.32633,	0.32733,	0.32833,	0.32933,	0.33033,	0.33133,	0.33233,	0.33333,	0.33433,
0.33433,	0.33534,	0.33634,	0.33734,	0.33834,	0.33934,	0.34034,	0.34134,	0.34234,	0.34334,	0.34434,	0.34535,	0.34635,
0.34635,	0.34735,	0.34835,	0.34935,	0.35035,	0.35135,	0.35235,	0.35335,	0.35435,	0.35536,	0.35636,	0.35736,	0.35836,
0.35836,	0.35936,	0.36036,	0.36136,	0.36236,	0.36336,	0.36436,	0.36537,	0.36637,	0.36737,	0.36837,	0.36937,	0.37037,
0.37037,	0.37137,	0.37237,	0.37337,	0.37437,	0.37538,	0.37638,	0.37738,	0.37838,	0.37938,	0.38038,	0.38138,	0.38238,
0.38238,	0.38338,	0.38438,	0.38539,	0.38639,	0.38739,	0.38839,	0.38939,	0.39039,	0.39139,	0.39239,	0.39339,	0.39439,
0.39439,	0.3954,	0.3964,	0.3974,	0.3984,	0.3994,	0.4004,	0.4014,	0.4024,	0.4034,	0.4044,	0.40541,	0.40641,
0.40641,	0.40741,	0.40841,	0.40941,	0.41041,	0.41141,	0.41241,	0.41341,	0.41441,	0.41542,	0.41642,	0.41742,	0.41842,
0.41842,	0.41942,	0.42042,	0.42142,	0.42242,	0.42342,	0.42442,	0.42543,	0.42643,	0.42743,	0.42843,	0.42943,	0.43043,
0.43043,	0.43143,	0.43243,	0.43343,	0.43443,	0.43544,	0.43644,	0.43744,	0.43844,	0.43944,	0.44044,	0.44144,	0.44244,
0.44244,	0.44344,	0.44444,	0.44545,	0.44645,	0.44745,	0.44845,	0.44945,	0.45045,	0.45145,	0.45245,	0.45345,	0.45445,
0.45445,	0.45546,	0.45646,	0.45746,	0.45846,	0.45946,	0.46046,	0.46146,	0.46246,	0.46346,	0.46446,	0.46547,	0.46647,
0.46647,	0.46747,	0.46847,	0.46947,	0.47047,	0.47147,	0.47247,	0.47347,	0.47447,	0.47548,	0.47648,	0.47748,	0.47848,
0.47848,	0.47948,	0.48048,	0.48148,	0.48248,	0.48348,	0.48448,	0.48549,	0.48649,	0.48749,	0.48849,	0.48949,	0.49049,
0.49049,	0.49149,	0.49249,	0.49349,	0.49449,	0.4955,	0.4965,	0.4975,	0.4985,	0.4995,	0.5005,	0.5015,	0.5025,
0.5025,	0.5035,	0.5045,	0.50551,	0.50651,	0.50751,	0.50851,	0.50951,	0.51051,	0.51151,	0.51251,	0.51351,	0.51451,
0.51451,	0.51552,	0.51652,	0.51752,	0.51852,	0.51952,	0.52052,	0.52152,	0.52252,	0.52352,	0.52452,	0.52553,	0.52653,
0.52653,	0.52753,	0.52853,	0.52953,	0.53053,	0.53153,	0.53253,	0.53353,	0.53453,	0.53554,	0.53654,	0.53754,	0.53854,
0.53854,	0.53954,	0.54054,	0.54154,	0.54254,	0.54354,	0.54454,	0.54555,	0.54655,	0.54755,	0.54855,	0.54955,	0.55055,
0.55055,	0.55155,	0.55255,	0.55355,	0.55455,	0.55556,	0.55656,	0.55756,	0.55856,	0.55956,	0.56056,	0.56156,	0.56256,
0.56256,	0.56356,	0.56456,	0.56557,	0.56657,	0.56757,	0.56857,	0.56957,	0.57057,	0.57157,	0.57257,	0.57357,	0.57457,
0.57457,	0.57558,	0.57658,	0.57758,	0.57858,	0.57958,	0.58058,	0.58158,	0.58258,	0.58358,	0.58458,	0.58559,	0.58659,
0.58659,	0.58759,	0.58859,	0.58959,	0.59059,	0.59159,	0.59259,	0.59359,	0.59459,	0.59556,	0.5966,	0.5976,	0.5986,

- 예측해보기

```
image_path = '/content/futbol-players-7/test/images/1-fps-2_00001_jpeg_jpg.rf.e95412d81fb5fe6dd2b3fb120b41ba1a.jpg'
#image_path = 'https://www.telegraph.co.uk/content/dam/football/2019/08/12/TELEMMGLPICT000206209364_trans_NvBQzQNjv4BqK3Ytq28vYzV8vgytz3tt20cdhPu0VqLHI0Gk
```

```
model_transfer.predict(source=image_path, save=True,
                        conf=0.1,
                        iou=0.9
                        )
```

```
image 1/1 /content/futbol-players-7/test/images/1-fps-2_00001_jpeg_jpg.rf.e95412d81fb5fe6dd2b3fb120b41ba1a.jpg: 384x640 8 players, 19.1ms
Speed: 2.4ms preprocess, 19.1ms inference, 3.9ms postprocess per image at shape (1, 3, 384, 640)
Results saved to runs/detect/train42
[ultralytics.engine.results.Results object with attributes:
```

```
boxes: ultralytics.engine.results.Boxes object
keypoints: None
masks: None
names: {0: 'futbol', 1: 'player', 2: 'referee'}
obb: None
orig_img: array([[ 61,  74,  90],
                 [112, 125, 141],
                 [142, 155, 169],
                 ...,
                 [ 68,  43,  47],
                 [ 64,  36,  42],
                 [ 66,  37,  46]],

                 [[ 69,  82,  98],
                 [121, 134, 150],
                 [149, 162, 176],
                 ...,
                 [ 48,  23,  27],
                 [ 59,  31,  37],
                 [ 69,  40,  49]],

                 [[ 63,  78,  94],
                 [115, 130, 146],
                 [145, 161, 174],
                 ...,
                 [ 68,  45,  49],
                 [ 67,  41,  47],
                 [ 61,  35,  41]],
```

```
...,

                 [[ 57, 143, 113],
                 [ 57, 143, 113],
                 [ 57, 143, 113],
                 ...,
                 [ 51, 146, 112],
                 [ 51, 146, 112],
                 [ 51, 146, 112]],

                 [[ 59, 143, 114],
                 [ 59, 143, 114],
                 [ 59, 143, 114],
                 ...,
                 [ 43, 138, 104],
                 [ 43, 138, 104],
                 [ 43, 138, 104]],

                 [[ 59, 143, 114],
                 [ 59, 143, 114],
                 [ 59, 143, 114],
                 ...,
                 [ 49, 144, 110],
                 [ 49, 144, 110]]]
```

코딩을 시작하거나 AI로 코드를 선택하세요.

