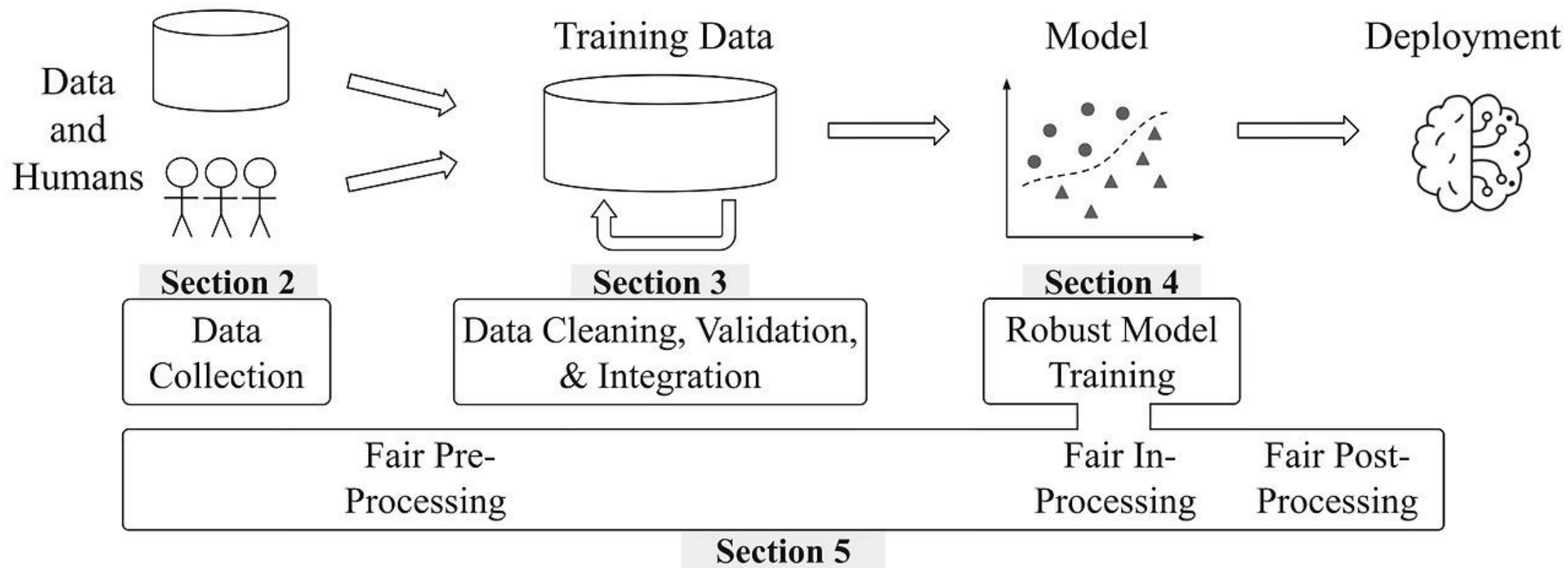


AI 실전 1주차

나만의 모델 설계 과정 및 진행

Feat. tensorflow

모델 제작 과정



Tensorflow install

TensorFlow 2 설치

TensorFlow는 다음 64비트 시스템에서 테스트 및 지원됩니다.

- Python 3.6~3.9
- macOS 10.12.6(Sierra) 이상(GPU 지원 없음)
- Ubuntu 16.04 이상
- Windows 7 이상(C++ 재배포 가능 패키지)

패키지 다운로드

Python의 *pip* 패키지 관리자를 사용해 TensorFlow를 설치하세요.

★ TensorFlow 2 패키지에는 **pip** 19.0가 넘는 버전 (또는 macOS의 경우 20.3이 넘는 버전)가 필요합니다.

```
# Requires the latest pip
$ pip install --upgrade pip

# Current stable release for CPU and GPU
$ pip install tensorflow

# Or try the preview build (unstable)
$ pip install tf-nightly
```

- `pip install --upgrade pip`
- `pip install tensorflow`

<https://www.tensorflow.org/install?hl=ko>

CIFAR-10 DataSet

비행기



자동차



새



고양이



사슴



개



개구리



말



배



트럭



필요한 라이브러리 불러오기



```
import tensorflow as tf
```

```
from tensorflow.keras import datasets, layers, models  
import matplotlib.pyplot as plt
```

1. Load DataSet



```
(train_images, train_labels), (test_images, test_labels) = datasets.cifar10.load_data()
```

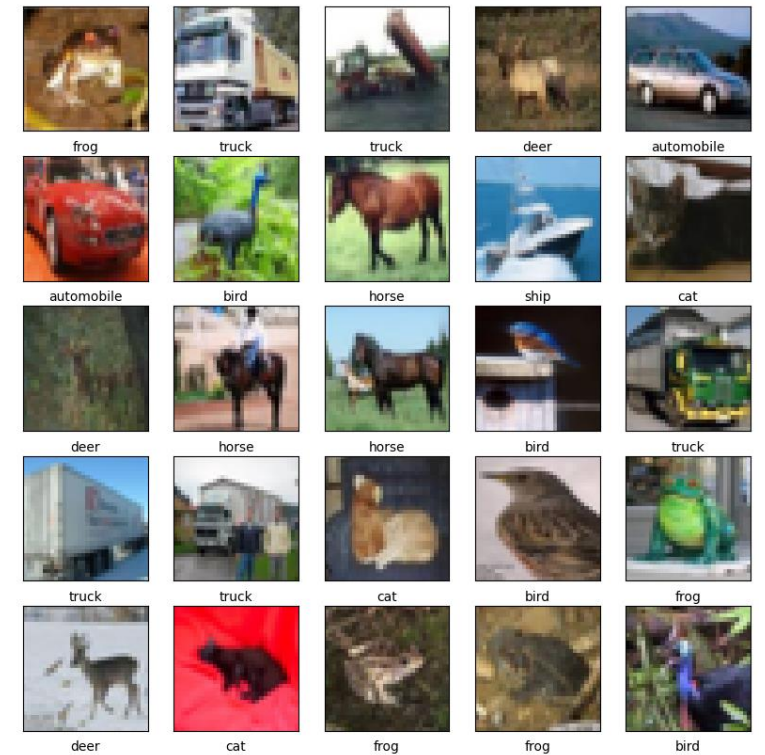
2. data preprocessing



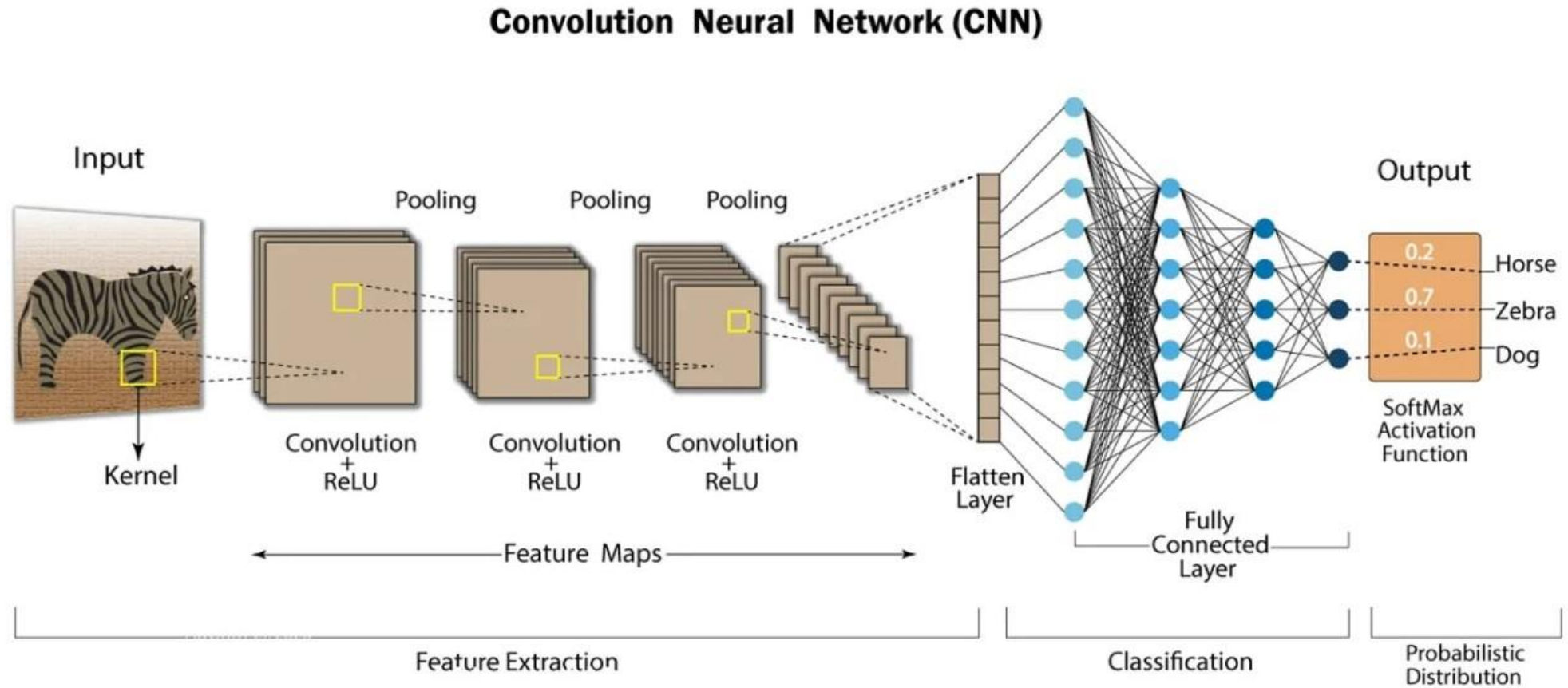
```
train_images, test_images = train_images / 255.0, test_images / 255.0
```

3. Check dataset


```
class_names = ['airplane', 'automobile', 'bird', 'cat', 'deer',  
               'dog', 'frog', 'horse', 'ship', 'truck']  
  
plt.figure(figsize=(10,10))  
for i in range(25):  
    plt.subplot(5,5,i+1)  
    plt.xticks([])  
    plt.yticks([])  
    plt.grid(False)  
    plt.imshow(train_images[i])  
    # The CIFAR labels happen to be arrays,  
    # which is why you need the extra index  
    plt.xlabel(class_names[train_labels[i][0]])  
plt.show()
```



CNN model struct




4. Model create (특성 추출)




```
model = models.Sequential()  
model.add(layers.Conv2D(32, (3, 3), activation='relu', input_shape=(32, 32, 3)))  
model.add(layers.MaxPooling2D((2, 2)))  
model.add(layers.Conv2D(64, (3, 3), activation='relu'))  
model.add(layers.MaxPooling2D((2, 2)))  
model.add(layers.Conv2D(64, (3, 3), activation='relu'))
```

4.1 Model create (클래스 분류)



```
model.add(layers.Flatten())  
model.add(layers.Dense(64, activation='relu'))  
model.add(layers.Dense(10))
```

5. Model optimizer settings and train




```
model.compile(optimizer='adam',  
              loss=tf.keras.losses.SparseCategoricalCrossentropy(from_logits=True),  
              metrics=['accuracy'])  
  
history = model.fit(train_images, train_labels, epochs=10,  
                    validation_data=(test_images, test_labels))
```

과제 실습 100가지 종류 스포츠 이미지 분류하기

<https://www.kaggle.com/datasets/gpiosenska/sports-classification/data>

How to download

GERRY · UPDATED 2 YEARS AGO

100 Sports Image Classification

13493 train, 500 test, 500 validate images 224,224,3 jpg format

[Data Card](#) [Code \(154\)](#) [Discussion \(3\)](#) [Suggestions \(0\)](#)

About Dataset

Context

Please upvote if you find this dataset of use. - Thank you

This version is an update of the earlier version. I ran a data set quality evaluation version which found a considerable number of duplicate and near duplicate images which lead to falsely higher values of validation and test set accuracy and I have eliminated them from the dataset.

343

<> Code

Download

DOWNLOAD VIA

kagglehub

New to Kaggle API? Here's how to [set up your API keys](#).

```
import kagglehub

# Download latest version
path = kagglehub.dataset_download("gpiosenka/sports-classification")

print("Path to dataset files:", path)
```

Download dataset as zip (445 MB)

Export metadata as Croissant