

```
!pip install kaggle
```

```
Requirement already satisfied: kaggle in /usr/local/lib/python3.12/dist-packages (1.7.4.5)
Requirement already satisfied: bleach in /usr/local/lib/python3.12/dist-packages (from kaggle) (6.3.0)
Requirement already satisfied: certifi>=14.05.14 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2026.2.25)
Requirement already satisfied: charset-normalizer in /usr/local/lib/python3.12/dist-packages (from kaggle) (3.4.4)
Requirement already satisfied: idna in /usr/local/lib/python3.12/dist-packages (from kaggle) (3.11)
Requirement already satisfied: protobuf in /usr/local/lib/python3.12/dist-packages (from kaggle) (5.29.6)
Requirement already satisfied: python-dateutil>=2.5.3 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.9.0.post0)
Requirement already satisfied: python-slugify in /usr/local/lib/python3.12/dist-packages (from kaggle) (8.0.4)
Requirement already satisfied: requests in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.32.4)
Requirement already satisfied: setuptools>=21.0.0 in /usr/local/lib/python3.12/dist-packages (from kaggle) (75.2.0)
Requirement already satisfied: six>=1.10 in /usr/local/lib/python3.12/dist-packages (from kaggle) (1.17.0)
Requirement already satisfied: text-unidecode in /usr/local/lib/python3.12/dist-packages (from kaggle) (1.3)
Requirement already satisfied: tqdm in /usr/local/lib/python3.12/dist-packages (from kaggle) (4.67.3)
Requirement already satisfied: urllib3>=1.15.1 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.5.0)
Requirement already satisfied: webencodings in /usr/local/lib/python3.12/dist-packages (from kaggle) (0.5.1)
```

```
from google.colab import files
files.upload()
```

No file chosen

Upload widget is only available when the cell has been executed in the current browser session. Please rerun this cell to enable.

Saving kaggle (2).json to kaggle (2).json

```
# إعادة تسمية الملف للاسم القياسي المطلوب
!mv "kaggle (2).json" kaggle.json
```

```
# Kaggle إنشاء فولدر مخفي خاص بـ
!mkdir -p ~/.kaggle
# إلى الفولدر API نسخ ملف الـ
!cp kaggle.json ~/.kaggle/
# إعطاء صلاحيات للملف (حماية وأمان)
!chmod 600 ~/.kaggle/kaggle.json
```

```
!kaggle datasets download -d tongpython/cat-and-dog
```

Dataset URL: <https://www.kaggle.com/datasets/tongpython/cat-and-dog>
License(s): CC0-1.0
cat-and-dog.zip: Skipping, found more recently modified local copy (use --force to force download)

```
!unzip cat-and-dog.zip
```

Archive: cat-and-dog.zip
replace test_set/test_set/cats/_DS_Store? [y]es, [n]o, [A]ll, [N]one, [r]ename:

```
!pip install tensorflow keras matplotlib scikit-learn
```

```
Requirement already satisfied: tensorflow in /usr/local/lib/python3.12/dist-packages (2.19.0)
Requirement already satisfied: keras in /usr/local/lib/python3.12/dist-packages (3.10.0)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.12/dist-packages (3.10.0)
Requirement already satisfied: scikit-learn in /usr/local/lib/python3.12/dist-packages (1.6.1)
Requirement already satisfied: absl-py>=1.0.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (1.4.0)
Requirement already satisfied: astunparse>=1.6.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (1.6.3)
Requirement already satisfied: flatbuffers>=24.3.25 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (25.12.19)
Requirement already satisfied: gast!=0.5.0,!>=0.5.2,>=0.2.1 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (0.2.0)
Requirement already satisfied: google-pasta>=0.1.1 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (0.2.0)
Requirement already satisfied: libclang>=13.0.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (18.1.1)
Requirement already satisfied: opt-einsum>=2.3.2 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (3.4.0)
Requirement already satisfied: packaging in /usr/local/lib/python3.12/dist-packages (from tensorflow) (26.0)
Requirement already satisfied: protobuf!=4.21.0,!>=4.21.1,!>=4.21.2,!>=4.21.3,!>=4.21.4,!>=4.21.5,<6.0.0dev,>=3.20.3 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (4.21.4)
Requirement already satisfied: requests<3,>=2.21.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (2.32.4)
Requirement already satisfied: setuptools in /usr/local/lib/python3.12/dist-packages (from tensorflow) (75.2.0)
Requirement already satisfied: six>=1.12.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (1.17.0)
Requirement already satisfied: termcolor>=1.1.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (3.3.0)
Requirement already satisfied: typing-extensions>=3.6.6 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (4.15.0)
Requirement already satisfied: wrapt>=1.11.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (2.1.1)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (1.78.0)
Requirement already satisfied: tensorboard~=2.19.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (2.19.0)
Requirement already satisfied: numpy<2.0.0,>=1.26.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (2.0.2)
Requirement already satisfied: h5py>=3.11.0 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (3.15.1)
Requirement already satisfied: ml-dtypes<1.0.0,>=0.5.1 in /usr/local/lib/python3.12/dist-packages (from tensorflow) (0.5.4)
Requirement already satisfied: rich in /usr/local/lib/python3.12/dist-packages (from keras) (13.9.4)
Requirement already satisfied: namex in /usr/local/lib/python3.12/dist-packages (from keras) (0.1.0)
Requirement already satisfied: optree in /usr/local/lib/python3.12/dist-packages (from keras) (0.19.0)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (1.3.3)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (4.61.1)
Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (1.4.9)
Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (11.3.0)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (3.3.2)
```

Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.12/dist-packages (from matplotlib) (2.9.0.post1)
Requirement already satisfied: scipy>=1.6.0 in /usr/local/lib/python3.12/dist-packages (from scikit-learn) (1.16.3)
Requirement already satisfied: joblib>=1.2.0 in /usr/local/lib/python3.12/dist-packages (from scikit-learn) (1.5.3)
Requirement already satisfied: threadpoolctl>=3.1.0 in /usr/local/lib/python3.12/dist-packages (from scikit-learn) (3.6.0)
Requirement already satisfied: wheel<1.0,>=0.23.0 in /usr/local/lib/python3.12/dist-packages (from astunparse>=1.6.0->tensorflow) (0.43.0)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.12/dist-packages (from requests<3,>=2.21.0->tensorflow) (3.4.0)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.12/dist-packages (from requests<3,>=2.21.0->tensorflow) (3.10.1)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.12/dist-packages (from requests<3,>=2.21.0->tensorflow) (2025.1.1)
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.12/dist-packages (from tensorboard~>2.19.0->tensorflow) (3.7.0)
Requirement already satisfied: tensorboard-data-server<0.8.0,>=0.7.0 in /usr/local/lib/python3.12/dist-packages (from tensorboard~>2.19.0->tensorflow) (0.7.0)
Requirement already satisfied: werkzeug>=1.0.1 in /usr/local/lib/python3.12/dist-packages (from tensorboard~>2.19.0->tensorflow) (3.1.0)
Requirement already satisfied: markdown-it-py>=2.2.0 in /usr/local/lib/python3.12/dist-packages (from rich->keras) (4.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in /usr/local/lib/python3.12/dist-packages (from rich->keras) (2.19.2)
Requirement already satisfied: mdurl~>0.1 in /usr/local/lib/python3.12/dist-packages (from markdown-it-py>=2.2.0->rich->keras) (0.1.2)
Requirement already satisfied: markupsafe>=2.1.1 in /usr/local/lib/python3.12/dist-packages (from werkzeug>=1.0.1->tensorboard~>2.19.0->tensorflow) (3.0.2)

```
import tensorflow as tf
from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Conv2D, MaxPooling2D, Flatten, Dense
import matplotlib.pyplot as plt
```

```
dataset_path = "/content/training_set/training_set"
img_size = (150,150)
batch_size = 32
```

```
train_datagen = ImageDataGenerator(
    rescale=1./255,
    rotation_range=20,
    width_shift_range=0.2,
    height_shift_range=0.2,
    shear_range=0.2,
    zoom_range=0.2,
    horizontal_flip=True,
    validation_split=0.2
)
```

```
train_data = train_datagen.flow_from_directory(
    "/content/training_set/training_set",
    target_size=img_size,
    batch_size=batch_size,
    class_mode="binary",
    subset="training"
)
```

Found 6404 images belonging to 2 classes.

```
test_data = train_datagen.flow_from_directory(
    "/content/test_set/test_set",
    target_size=img_size,
    batch_size=batch_size,
    class_mode="binary",
    subset="validation"
)
```

Found 404 images belonging to 2 classes.

```
model = Sequential([
    Conv2D(32,(3,3),activation="relu",input_shape=(150,150,3)),
    MaxPooling2D(2,2),
    Conv2D(64,(3,3),activation="relu"),
    MaxPooling2D(2,2),
    Conv2D(128,(3,3),activation="relu"),
    MaxPooling2D(2,2),
    Flatten(),
    Dense(128,activation="relu"),
    Dense(1,activation="sigmoid")
])
```

```
/usr/local/lib/python3.12/dist-packages/keras/src/layers/convolutional/base_conv.py:113: UserWarning: Do not pass an `input` argument to `__init__` of `Layer` objects. It is deprecated.
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
```

```
model.compile(
    optimizer="adam",
    loss="binary_crossentropy",
    metrics=["accuracy"]
)
```

```

history = model.fit(
train_data,
epochs=10,
validation_data=test_data
)

```

```

/usr/local/lib/python3.12/dist-packages/keras/src/trainers/data_adapters/py_dataset_adapter.py:121: UserWarning: Your `PyDat
self._warn_if_super_not_called()

```

```

Epoch 1/10
201/201 ————— 309s 2s/step - accuracy: 0.5215 - loss: 0.7361 - val_accuracy: 0.5545 - val_loss: 0.6898
Epoch 2/10
201/201 ————— 302s 2s/step - accuracy: 0.5415 - loss: 0.6878 - val_accuracy: 0.4950 - val_loss: 0.6960
Epoch 3/10
201/201 ————— 304s 2s/step - accuracy: 0.5455 - loss: 0.6871 - val_accuracy: 0.5297 - val_loss: 0.6927
Epoch 4/10
201/201 ————— 308s 2s/step - accuracy: 0.5789 - loss: 0.6778 - val_accuracy: 0.5322 - val_loss: 0.6777
Epoch 5/10
201/201 ————— 298s 1s/step - accuracy: 0.6015 - loss: 0.6604 - val_accuracy: 0.6064 - val_loss: 0.6468
Epoch 6/10
201/201 ————— 299s 1s/step - accuracy: 0.6513 - loss: 0.6303 - val_accuracy: 0.5990 - val_loss: 0.6625
Epoch 7/10
201/201 ————— 301s 1s/step - accuracy: 0.6355 - loss: 0.6391 - val_accuracy: 0.6559 - val_loss: 0.6191
Epoch 8/10
201/201 ————— 299s 1s/step - accuracy: 0.6428 - loss: 0.6105 - val_accuracy: 0.6757 - val_loss: 0.5905
Epoch 9/10
201/201 ————— 303s 2s/step - accuracy: 0.6968 - loss: 0.5813 - val_accuracy: 0.6807 - val_loss: 0.5917
Epoch 10/10
201/201 ————— 300s 1s/step - accuracy: 0.7158 - loss: 0.5631 - val_accuracy: 0.7228 - val_loss: 0.5521

```

```

plt.plot(history.history["accuracy"])
plt.plot(history.history["val_accuracy"])
plt.show()

```

