

```
import tensorflow as tf
import numpy as np
from tensorflow import keras
import os
import cv2
from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.preprocessing import image
import matplotlib.pyplot as plt
```

```
!unzip /content/OriginalDataset.zip
```

```
inflating: Original Dataset/val/kids-running/0943.jpg
inflating: Original Dataset/val/kids-running/0944.jpg
inflating: Original Dataset/val/kids-running/0945.jpg
inflating: Original Dataset/val/kids-running/0946.jpg
inflating: Original Dataset/val/kids-running/0947.jpg
inflating: Original Dataset/val/kids-running/0948.jpg
inflating: Original Dataset/val/kids-running/0949.jpg
inflating: Original Dataset/val/kids-running/0950.jpg
inflating: Original Dataset/val/kids-running/0951.jpg
inflating: Original Dataset/val/kids-running/0952.jpg
inflating: Original Dataset/val/kids-running/0953.jpg
inflating: Original Dataset/val/kids-running/0954.jpg
inflating: Original Dataset/val/kids-running/0955.jpg
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inflating: Original Dataset/val/kids-running/0958.jpg
inflating: Original Dataset/val/kids-running/0959.jpg
inflating: Original Dataset/val/kids-running/0960.jpg
inflating: Original Dataset/val/kids-running/0961.jpg
inflating: Original Dataset/val/kids-running/0962.jpg
inflating: Original Dataset/val/kids-running/0963.jpg
inflating: Original Dataset/val/kids-running/0964.jpg
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inflating: Original Dataset/val/kids-running/0973.jpg
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inflating: Original Dataset/val/kids-running/0975.jpg
inflating: Original Dataset/val/kids-running/0976.jpg
inflating: Original Dataset/val/kids-running/0977.jpg
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inflating: Original Dataset/val/kids-running/0983.jpg
inflating: Original Dataset/val/kids-running/0984.jpg
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inflating: Original Dataset/val/kids-running/0986.jpg
inflating: Original Dataset/val/kids-running/0987.jpg
inflating: Original Dataset/val/kids-running/0988.jpg
inflating: Original Dataset/val/kids-running/0989.jpg
inflating: Original Dataset/val/kids-running/0990.jpg
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inflating: Original Dataset/val/kids-running/0992.jpg
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inflating: Original Dataset/val/kids-running/0995.jpg
inflating: Original Dataset/val/kids-running/0996.jpg
inflating: Original Dataset/val/kids-running/0997.jpg
inflating: Original Dataset/val/kids-running/0998.jpg
inflating: Original Dataset/val/kids-running/0999.jpg
inflating: Original Dataset/val/kids-running/1000.jpg
```

```
train = ImageDataGenerator(rescale=1/255)
test = ImageDataGenerator(rescale=1/255)
```

```
train_dataset = train.flow_from_directory("/content/Original Dataset/train",
                                          target_size=(150,150),
                                          batch_size = 32,
                                          class_mode = 'binary')
```

```
test_dataset = test.flow_from_directory("/content/Original Dataset/val",
                                         target_size=(150,150),
                                         batch_size = 32,
                                         class_mode = 'binary')
```

```
Found 1260 images belonging to 2 classes.
Found 740 images belonging to 2 classes.
```

```

test_dataset.class_indices

{'dogs-running': 0, 'kids-running': 1}

model = keras.Sequential()

# Convolutional layer and maxpool layer 1
model.add(keras.layers.Conv2D(32,(3,3),activation='relu',input_shape=(150,150,3)))
model.add(keras.layers.MaxPool2D(2,2))

# Convolutional layer and maxpool layer 2
model.add(keras.layers.Conv2D(64,(3,3),activation='relu'))
model.add(keras.layers.MaxPool2D(2,2))

# Convolutional layer and maxpool layer 3
model.add(keras.layers.Conv2D(128,(3,3),activation='relu'))
model.add(keras.layers.MaxPool2D(2,2))

# Convolutional layer and maxpool layer 4
model.add(keras.layers.Conv2D(128,(3,3),activation='relu'))
model.add(keras.layers.MaxPool2D(2,2))

# This layer flattens the resulting image array to 1D array
model.add(keras.layers.Flatten())

# Hidden layer with 512 neurons and Rectified Linear Unit activation function
model.add(keras.layers.Dense(512,activation='relu'))

model.add(keras.layers.Dense(1,activation='sigmoid'))

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

#steps_per_epoch = train_imagesize/batch_size

model.fit_generator(train_dataset,
                    steps_per_epoch = 40,
                    epochs = 10,
                    validation_data = test_dataset

)

Epoch 1/10
<ipython-input-20-fc626a8b46ed>:3: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use
    model.fit_generator(train_dataset,
40/40 [=====] - 51s 1s/step - loss: 0.6513 - accuracy: 0.6183 - val_loss: 0.7368 - val_accuracy: 0.5757
Epoch 2/10
40/40 [=====] - 52s 1s/step - loss: 0.5683 - accuracy: 0.7087 - val_loss: 0.7577 - val_accuracy: 0.5784
Epoch 3/10
40/40 [=====] - 51s 1s/step - loss: 0.5292 - accuracy: 0.7333 - val_loss: 0.6799 - val_accuracy: 0.6405
Epoch 4/10
40/40 [=====] - 51s 1s/step - loss: 0.5253 - accuracy: 0.7444 - val_loss: 0.6601 - val_accuracy: 0.6419
Epoch 5/10
40/40 [=====] - 51s 1s/step - loss: 0.4986 - accuracy: 0.7627 - val_loss: 0.6569 - val_accuracy: 0.6541
Epoch 6/10
40/40 [=====] - 56s 1s/step - loss: 0.4704 - accuracy: 0.7667 - val_loss: 0.6891 - val_accuracy: 0.6405
Epoch 7/10
40/40 [=====] - 52s 1s/step - loss: 0.4126 - accuracy: 0.8008 - val_loss: 0.7951 - val_accuracy: 0.6311
Epoch 8/10
40/40 [=====] - 51s 1s/step - loss: 0.3745 - accuracy: 0.8294 - val_loss: 0.8036 - val_accuracy: 0.6527
Epoch 9/10
40/40 [=====] - 52s 1s/step - loss: 0.3644 - accuracy: 0.8421 - val_loss: 0.7416 - val_accuracy: 0.6203
Epoch 10/10
40/40 [=====] - 51s 1s/step - loss: 0.2910 - accuracy: 0.8730 - val_loss: 0.8733 - val_accuracy: 0.6270
<keras.callbacks.History at 0x7f85054a7f40>

def predictImage(filename):
    img1 = image.load_img(filename,target_size=(150,150))

    plt.imshow(img1)

    Y = image.img_to_array(img1)

    X = np.expand_dims(Y,axis=0)
    val = model.predict(X)
    print(val)
    if val == 1:

```

```
plt.xlabel("dogs_running", fontsize=30)

elif val == 0:

plt.xlabel("kids_running", fontsize=30)
```

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