```
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/AugmentedDataset.zip
```

```
       inflating: Augmented Dataset/val/kids_running/a_0_9877.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9878.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9880.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9881.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9882.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9883.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9884.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9887.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9891.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9893.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9897.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9900.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9902.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9903.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9905.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9907.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9908.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9913.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9917.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9918.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9919.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9922.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9923.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9931.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9932.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9933.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9934.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9935.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9937.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9938.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9940.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9941.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9943.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9946.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9949.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9955.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9956.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9957.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9959.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9964.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9965.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9967.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9968.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9970.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9971.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9972.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9974.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9976.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9977.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9980.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9983.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9987.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9988.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9989.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9990.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9991.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9994.jpeg
       inflating: Augmented Dataset/val/kids_running/a_0_9998.jpeg
```

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

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

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

```
     Found 7000 images belonging to 2 classes.
     Found 3079 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 = 219,
         epochs = 10,
         validation_data = test_dataset

         )
```

```
Epoch 1/10
<ipython-input-29-266a339703f8>:3: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use
  model.fit_generator(train_dataset,
219/219 [==============================] - 284s 1s/step - loss: 0.6779 - accuracy: 0.5623 - val_loss: 0.6419 - val_accuracy: 0.6184
Epoch 2/10
219/219 [==============================] - 280s 1s/step - loss: 0.6385 - accuracy: 0.6254 - val_loss: 0.6141 - val_accuracy: 0.6733
Epoch 3/10
219/219 [==============================] - 281s 1s/step - loss: 0.6169 - accuracy: 0.6513 - val_loss: 0.6569 - val_accuracy: 0.6041
Epoch 4/10
219/219 [==============================] - 278s 1s/step - loss: 0.5851 - accuracy: 0.6859 - val_loss: 0.5902 - val_accuracy: 0.6863
Epoch 5/10
219/219 [==============================] - 278s 1s/step - loss: 0.5427 - accuracy: 0.7309 - val_loss: 0.5562 - val_accuracy: 0.7226
Epoch 6/10
219/219 [==============================] - 277s 1s/step - loss: 0.5234 - accuracy: 0.7340 - val_loss: 0.5637 - val_accuracy: 0.7178
Epoch 7/10
219/219 [==============================] - 285s 1s/step - loss: 0.4999 - accuracy: 0.7511 - val_loss: 0.5577 - val_accuracy: 0.7217
Epoch 8/10
219/219 [==============================] - 280s 1s/step - loss: 0.4706 - accuracy: 0.7720 - val_loss: 0.5480 - val_accuracy: 0.7321
Epoch 9/10
219/219 [==============================] - 279s 1s/step - loss: 0.4155 - accuracy: 0.8023 - val_loss: 0.6096 - val_accuracy: 0.7311
Epoch 10/10
219/219 [==============================] - 274s 1s/step - loss: 0.3655 - accuracy: 0.8327 - val_loss: 0.6891 - val_accuracy: 0.7025
<keras.callbacks.History at 0x7f8508dd4910>
```

```
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)
```


✓ 0s completed at 4:36 AM