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USN :1SV21CS010

TEAM:05

```
import tensorflow as tf
from tensorflow import keras
from tensorflow.keras import layers
from tensorflow.keras.preprocessing.image import ImageDataGeneratorIMG_SIZE =
224
BATCH_SIZE  = 32

train_datagen = ImageDataGenerator(rescale=1./255,validation_split=0.2)
train_generator =
train_datagen.flow_from_directory('/content/drive/MyDrive/ML_TEAM5/1SV
21CS010/TEACHABLE MACHINE/Animals',
    target_size=(IMG_SIZE, IMG_SIZE),
    batch_size=BATCH_SIZE,
    class_mode='categorical',
    subset='training'
)
val_generator =
train_datagen.flow_from_directory('/content/drive/MyDrive/ML_TEAM5/1SV
21CS010/TEACHABLE MACHINE/Animals',
    target_size=(IMG_SIZE, IMG_SIZE),
    batch_size=BATCH_SIZE,
    class_mode='categorical',
    subset='validation'
)

Found 94 images belonging to 4 classes.
Found 22 images belonging to 4 classes.

# Define the model
model =
    keras.Sequential([layers.
    Conv2D(32,
(3,3),activation='relu',input_shape=(IMG_SIZE,IMG_SIZE,3)),
    layers.MaxPooling2D(2,2), layers.Conv2D(64,(3,3),activation='relu'),
    layers.MaxPooling2D(2,2), layers.Conv2D(128,(3,3),activation='relu'),
    layers.MaxPooling2D(2,2),
    layers.Flatten(), layers.Dense(128,activation='relu'),
    layers.Dense(1,activation='sigmoid') #output layer
])

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

model.fit(train_generator,validation_data=val_generator,epochs=5)Epoch 1/5
3/3 [==============================] - 35s 11s/step - loss: 1.6646 -
accuracy: 0.5904 - val_loss: 0.6126 - val_accuracy: 0.7500
```

```
Epoch 2/5
3/3 [==============================] - 11s 4s/step - loss: 0.6485 -
accuracy: 0.7500 - val_loss: 0.6327 - val_accuracy: 0.7500Epoch
3/5
3/3 [==============================] - 11s 4s/step - loss: 0.6110 -
accuracy: 0.7500 - val_loss: 0.5677 - val_accuracy: 0.7500Epoch
4/5
3/3 [==============================] - 10s 3s/step - loss: 0.5809 -
accuracy: 0.7500 - val_loss: 0.5778 - val_accuracy: 0.7500Epoch
5/5
3/3 [==============================] - 11s 3s/step - loss: 0.5699 -
accuracy: 0.7500 - val_loss: 0.5672 - val_accuracy: 0.7500

<keras.src.callbacks.History at 0x7a71c4124fa0>

model.save("Model.h5","label.txt")

/usr/local/lib/python3.10/dist-packages/keras/src/engine/ training.py:3103:
UserWarning: You are saving your model as an HDF5file via `model.save()`.
This file format is considered legacy. We recommend using instead the native
Keras format, e.g.
`model.save('my_model.keras')`.
  saving_api.save_model(

from tensorflow.keras.models import load_model from
tensorflow.keras.preprocessing import imageimport
numpy as np
model = load_model("/content/Model.h5")

test_image_path =
'/content/drive/MyDrive/ML_TEAM5/1SV21CS010/TEACHABLE
MACHINE/Animals/Lion/africa-animal-big-brown-41176.jpeg' img =
image.load_img(test_image_path,target_size=(224,224))img_array =
image.img_to_array(img)
img_array = np.expand_dims(img_array,axis=0)

img_array /= 255.
prediction = model.predict(img_array)
print(prediction)

1/1 [==============================] - 0s 165ms/step
[[0.2796262]]

if prediction>0.3:
  print("Cheetha",prediction[0][0])
elif prediction>0.33:
  print("Tiger",prediction[0][0])
else:
  print("Lion",prediction[0][0])

Lion 0.279626
```