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import tensorflow as tf
from tensorflow import keras
from tensorflow.keras import layers
from tensorflow.keras.preprocessing.image import ImageDataGenerator

IMG_SIZE = 244
BATCH_SIZE = 32

from google.colab import drive
drive.mount('/content/drive')

Drive already mounted at /content/drive; to attempt to forcibly
remount, call drive.mount("/content/drive", force_remount=True).

train_datagen =
ImageDataGenerator(rescale=1./255,validation_split=0.2)
train_generator = train_datagen.flow_from_directory(
    '/content/drive/MyDrive/weather/Multi-class Weather Dataset',
    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/weather/Multi-class Weather Dataset',
    target_size=(IMG_SIZE,IMG_SIZE),
    batch_size=BATCH_SIZE,
    class_mode='categorical',
    subset='validation'
)

Found 236 images belonging to 4 classes.
Found 57 images belonging to 4 classes.

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')
])

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

```

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model.fit(train_generator, epochs=5, validation_data=val_generator)

Epoch 1/5
8/8 [=====] - 43s 5s/step - loss: 1.0724 - accuracy: 0.6335 - val_loss: 0.5707 - val_accuracy: 0.7500
Epoch 2/5
8/8 [=====] - 40s 5s/step - loss: 0.5818 - accuracy: 0.7500 - val_loss: 0.5688 - val_accuracy: 0.7500
Epoch 3/5
8/8 [=====] - 42s 5s/step - loss: 0.5702 - accuracy: 0.7500 - val_loss: 0.5712 - val_accuracy: 0.7500
Epoch 4/5
8/8 [=====] - 44s 6s/step - loss: 0.5686 - accuracy: 0.7500 - val_loss: 0.5676 - val_accuracy: 0.7500
Epoch 5/5
8/8 [=====] - 39s 5s/step - loss: 0.5665 - accuracy: 0.7500 - val_loss: 0.5674 - val_accuracy: 0.7500

<keras.src.callbacks.History at 0x7b4ad0c92650>

model.save("model2.h5", "label.txt")

from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
import numpy as np

model = load_model('/content/model2.h5')
test_image_path = '/content/drive/MyDrive/weather/Multi-class Weather Dataset/Cloudy/cloudy83.jpg'
img = image.load_img(test_image_path, target_size=(244, 244))
img_array = image.img_to_array(img)
img_array = np.expand_dims(img_array, axis=0)

img_array = img_array / 255.0

predictions = model.predict(img_array)
print(predictions)

1/1 [=====] - 0s 261ms/step
[[0.2886785]]

if predictions < 0.5:
    print("This is a cloudy")
else:
    print("This is a rain")

This is a cloudy

```