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SOURCE CODE:

fruit.ipynb (due to limited page size the code vegetable.ipynb uploadedin github)#!/usr/bin/env python

coding:

utf-8# In[1]:

pwd

In[2]: cd E:/IBM_MY_COURSE/Project/Dataset PlantDisease/fruit-dataset/fruit-dataset

Apply ImageDataGenerator functionality to Train and Test set

Preprocessing # In[3]: from keras.preprocessing.image importImageDataGenerator train_datagen =

ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizontal_fli p=True) test_datagen = ImageDataGenerator(rescale=1) #In[4]: pw

In[5]: x_train = train_datagen.flow_from_directory('E:/IBM_MY_COURSE/Project/Datas et Plant Disease/fruit- dataset/fruitdataset/train',target_size=(128,128),batch_size=32,class_mode='cate gorical')

In[6]: x_test=test_datagen.flow_from_directory('E:/IBM_MY_COURSE/Project/ Datas et Plant Disease/fruit-dataset/fruit-dataset/test',target_size=(128,128), batch_size=32,class_mode='categorical') # # Import the models

In[7]: from tensorflow.keras.models import Sequential from tensorflow.keras.layers importDense,Convolution2D,MaxPool2D,Flatten

Initializing the models 10# In[8]:

model=Sequential() # # Add CNN Layers

In[9]: model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation= 'relu')) # In[10]: x_train.class_indices

Add Pooling layer#

In[11]:model.add(MaxPool2D(pool_size=(2,2)

))# # Add Flatten layer # In[12]:

model.add(Flatten()) # # Add DenseLayer

In[21]: model.add(Dense(40, kernel_initializer='uniform',activation='relu')) model.add(Dense(20, kernel_initializer='random_uniform',activation='relu'))

Add Output Layer # In[24]:model.add(Dense(6,activation='softmax',kernel_initializer='rando m_uniform'))

Compile the model # In[25]:model.compile(loss='categorical_crossentropy',optimizer='adam', metrics=['accuracy']) # In[26]: len(x_train)

In[27]:5384/32

Fit the Model

In[28]:

model.fit_generator(x_train,steps_per_epoch=168,validation_data=x_test ,validat ion_st eps=52,epochs=3)# #

Save the Model

In[29]:

model.save("fruit.h5")#

In[30]: ls

Test the Model

In[32]: from keras.preprocessing import image from tensorflow.keras.preprocessing.image import img_to_array from tensorflow.keras.models import load_model import numpy as np

In[33]: model = load_model("fruit.h5") # # Test Apple_Healthy Class images

In[37]:img = image.load_img('E:/IBM_MY_COURSE/Project/Dataset PlantDisease/fruitdataset/fruit-dataset/test/Apple_____ healthy/00fca0da-2db3-481b- b98a9b67bb7b105c _____RS_H L7708.JPG',target_size=(128,128)) 11

In[39]: x=image.img_to_array(img) x=np.expand_dims(x,axis=0)#

In[40]: pred =model.predict_classes(x)

In[41]: pred

In[45]: index =['Apple___Black_rot','Apple___healthy','Corn_(maize)_____ Northern_Leaf_Blight','Corn_(maize)____healthy','Peach____ Bacterial_spot','Peach____healthy']

In[46]: print('the given image belogs to=',index[pred[0]])

Test Apple Black Rot class images # In[54]: img =image.load_img('E:/IBM_MY_COURSE/Project/Dataset PlantDisease/fruitdataset/fruit-dataset/test/Apple_____ Black_rot/0f3d45f4-e121-42cd- a5b6- be2f866a0574_____JR_FrgE.S 2870.JPG',target_size=(128,128))

In[55]: x=image.img_to_array(img) x=np.expand_dims(x,axis=0) pred =model.predict_classes(x) print('the given image belogsto=',index[pred[0]])

Test Corn Northern leaf Blight classimages

In[56]:img = image.load_img('E:/IBM_MY_COURSE/Project/Dataset PlantDisease/fruitdataset/fruit-dataset/test/Corn_(maize)_____Northern_Leaf_Blight/00a14441-7a62-4034-bc40-b196aeab2785_____RS_NLB 3932.JPG',target_size=(128,128))

In[57]: x=image.img_to_array(img) x=np.expand_dims(x,axis=0) pred =model.predict_classes(x) print('the given image belogsto=',index[pred[0]])

Test Corn Healthy class images # In[58]: img =image.load_img('E:/IBM_MY_COURSE/Project/Dataset Plant Disease/fruitdataset/fruit-dataset/test/Corn_(maize)_____ healthy/0a68ef5a-027c- 41ae-b227- 159dae77d3dd_____R.S_HL 7969 copy.jpg',target_size=(128,128))

In[59]: x=image.img_to_array(img) x=np.expand_dims(x,axis=0) pred =model.predict_classes(x) print('the given image belogs to=',index[pred[0]]) # #Test Peach Bacterial spot class

images # In[60]: img = image.oad_img('E:/IBM_MY_COURSE/Project/Dataset PlantDisease/fruitdataset/fruit-dataset/test/Peach_____ Bacterial_spot/00ddc106-692e- 4c67-b2e8- 569c924caf49___ Rutg._Bact.S 1228.JPG',target_size=(128,128)) 12# In[61]: x=image.img_to_array(img) x=np.expand_dims(x,axis=0) pred = model.predict_classes(x) print('the given image belogsto=',index[pred[0]])

Test Peach Healthy classimages

In[62]:img = image.load_img('E:/IBM_MY_COURSE/Project/Dataset PlantDisease/fruitdataset/fruit-dataset/test/Peach_____ healthy/1a07ce54-f4fd-41cf- b088- 144f6bf71859_____Rutg._HL 3543.JPG',target_size=(128,128))

In[63]: x=image.img_to_array(img) x=np.expand_dims(x,axis=0)pred =model.predict_classes(x) print('the given image belogsto=',index[pred[0]])l