

# PROJECT DEVELOPMENT PHASE

## SPRINT-4

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[3] from keras.models import Sequential
    from keras.layers import Dense
    from keras.layers import Convolution2D
    from keras.layers import MaxPooling2D
    from keras.layers import Flatten

[4] model=Sequential()
    model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))
    model.add(MaxPooling2D(pool_size=(2,2)))
    model.add(Flatten())
    model.add(Dense(units=300,kernel_initializer='uniform',activation='relu'))
    model.add(Dense(units=150,kernel_initializer='uniform',activation='relu'))
    model.add(Dense(units=6,kernel_initializer='random_uniform',activation='softmax'))
    model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['accuracy'])
    model.fit(x_train,steps_per_epoch=len(x_train)/3,epochs=2,validation_data=x_test,validation_steps=len(x_test)/3)

Epoch 1/2
899/899 [=====] - 604s 670ms/step - loss: 0.9434 - accuracy: 0.6646 - val_loss: 91.8654 - val_accuracy: 0.7797
Epoch 2/2
899/899 [=====] - 548s 609ms/step - loss: 0.5269 - accuracy: 0.8242 - val_loss: 68.2961 - val_accuracy: 0.6591
<keras.callbacks.History at 0x7f5612f31350>

[5] model.save('fruit.h5')

[6] #save in tar
    !tar -zcvf fruit-classification.tgz fruit.h5

    fruit.h5

[7] #IBM DEPLOYMENT

    !pip install watson-machine-learning-client

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[6] #save in tar
    !tar -zcvf fruit-classification.tgz fruit.h5

    fruit.h5

[7] #IBM DEPLOYMENT

    !pip install watson-machine-learning-client

[8] !pip install ibm_watson_machine_learning

[9] from ibm_watson_machine_learning import APIClient
    wml_credentials = {
        "url": "https://us-south.ml.cloud.ibm.com",
        "apikey": "I_ev68NLL5rQXLPxgM9688cVnzrViSxp2L8J21fQyrTq"
    }
    client = APIClient(wml_credentials)
    client

Python 3.7 and 3.8 frameworks are deprecated and will be removed in a future release. Use Python 3.9 framework instead.
<ibm_watson_machine_learning.client.APIClient at 0x7f5594f34c50>

[10] client.spaces.get_details()

[11] def guid_space_name(client,fertilizerrecommedation):
    spaces=client.spaces.get_details()
    return(next(item for item in space['resources'] if item['entity']['name']==fertilizerrecommedation)['metadata']['id'])

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✓ 16 [11] def guid\_space\_name(client,fertilizerrecommedation):  
space=client.spaces.get\_details()  
return(next(item for item in space['resources'] if item['entity']['name']==fertilizerrecommedation)['metadata']['id'])

✓ 16 space\_uid=guid\_space\_name(client,'FertilizersRecommendation')  
space\_uid

[-] 'e8ed84e6-cf94-41d5-8c13-cef04a7d6eab'

✓ 24 [24] client.set.default\_space(space\_uid)  
  
'SUCCESS'

✓ [14] client.software\_specifications.list()

✓ 14 [15] software\_space\_uid=client.software\_specifications.get\_uid\_by\_name('tensorflow\_rt2.1-py3.9')  
software\_space\_uid

'acd9c798-6974-5d2f-a657-ce06e986df4d'

✓ 23 [25] model\_details=client.repository.store\_model(model='fruit-classification.tgz',  
meta\_props={  
client.repository.ModelMetaNames.NAME:"Fruit CNN model",  
client.repository.ModelMetaNames.TYPE:"tensorflow 2.7",  
client.repository.ModelMetaNames.SOFTWARE\_SPEC\_UID:software\_space\_uid  
})

✓ 17 [17] model\_details

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✓ 23 [25] }

✓ 16 [17] model\_details

{'entity': {'hybrid\_pipeline\_software\_specs': [],  
'software\_spec': {'id': 'acd9c798-6974-5d2f-a657-ce06e986df4d',  
'name': 'tensorflow\_rt2.1-py3.9',  
'type': 'tensorflow 2.7'},  
'metadata': {'created\_at': '2022-11-18T17:27:33.068Z',  
'id': '2841a324-252e-4646-85f1-0696c643b545',  
'modified\_at': '2022-11-18T17:27:53.705Z',  
'name': 'Fruit CNN model',  
'owner': 'IBMid-6630043B9T',  
'resource\_key': 'd9c0f069-c7b5-4ef2-bcc5-089eef32234',  
'space\_id': '46a4db75-0a5b-4dbc-82e9-6aed90e709c5'},  
'system': {'warnings': []}}

✓ [18] model\_id=client.repository.get\_model\_id(model\_details)  
model\_id

✓ 14 [19] client.repository.download(model\_id,'fruit\_model\_ibm.tar.gz')

Successfully saved model content to file: 'fruit\_model\_ibm.tar.gz'  
'/content/fruit\_model\_ibm.tar.gz'

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