

# PROJECT DEVELOPMENT PHASE

## SPRINT-4

```
from keras.preprocessing.image import ImageDataGenerator
train_datagen=ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,horizontal_flip=True)
test_datagen=ImageDataGenerator(rescale=1)
x_train=train_datagen.flow_from_directory(r'/content/Dataset Plant Disease/fruit-dataset/fruit-dataset/train',target_size=(128,128),batch_size=2,class_mode='categorical')

x_test=test_datagen.flow_from_directory(r'/content/Dataset Plant Disease/fruit-dataset/fruit-dataset/test',target_size=(128,128),batch_size=2,class_mode='categorical')
```

```
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    x_test=test_datagen.flow_from_directory(r'/content/Dataset Plant Disease/fruit-dataset/fruit-dataset/test',target_size=(128,128),batch_size=2,class_mode='categorical')

Found 5384 images belonging to 6 classes.
Found 1686 images belonging to 6 classes.
```

```
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
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)
```

```

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Epoch 1/2
897/897 [=====] - 480s 535ms/step - loss: 0.8639 - accuracy: 0.6643 - val_loss: 40.9182 - val_accuracy: 0.8488
Epoch 2/2
897/897 [=====] - 474s 528ms/step - loss: 0.4604 - accuracy: 0.8302 - val_loss: 184.6315 - val_accuracy: 0.6690
<keras.callbacks.History at 0x7f901d5b2310>

```

```
model.save('fruit.h5')
```

```

#savin in tar
!tar -zcvf fruit-classification.tgz fruit.h5
!pip install watson-machine-learning-client
!pip install ibm_watson_machine_learning
from ibm_watson_machine_learning import APIClient
wml_credentials ={
    "url":"https://us-south.ml.cloud.ibm.com",
    "apikey":"14GLiykThvgLfCxigSQh_CejEVPmhFc2bZlfnW9PMJAm"
}
client = APIClient(wml_credentials)
client

```

```

[ ] from ibm_watson_machine_learning import APIClient
wml_credentials ={
    "url":"https://us-south.ml.cloud.ibm.com",
    "apikey":"14GLiykThvgLfCxigSQh_CejEVPmhFc2bZlfnW9PMJAm"
}
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 0x7f8fa465e550>

```
client.spaces.get_details()
```

```

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'])
space_uid=guid_space_name(client,'fertilizerrecommedation')
space_uid

```

```

software_space_uid=client.software_specifications.get_uid_by_name('tensorflow_rt22.1-py3.9')
software_space_uid

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

```

```

model_details=client.repository.store_model(model='fruit-
classification.tgz',

                                meta_props={
                                client.repository.Model
MetaNames.NAME:"Fruit CNN model",
                                client.repository.Model
MetaNames.TYPE:"tensorflow_2.7",
                                client.repository.Model
MetaNames.SOFTWARE_SPEC_UID:software_space_uid

                                })

model_details
    )

```

```

model_details
{
  "entity": {
    "hybrid_pipeline_software_specs": [],
    "software_spec": {
      "id": "acd9c798-6974-5d2f-a657-ce06e986df4d",
      "name": "tensorflow_rt22.1-py3.9",
      "type": "tensorflow_2.7"
    },
    "metadata": {
      "created_at": "2022-11-14T06:29:54.616Z",
      "id": "5bc7565d-65bc-41bb-aea3-5678fe7e5592",
      "modified_at": "2022-11-14T06:30:16.664Z",
      "name": "Fruit CNN model",
      "owner": "IBMId-6630043B9T",
      "resource_key": "c8098545-aa77-4e2d-a765-c8dd6048ca13",
      "space_id": "46a4db75-0a5b-4dbc-82e9-6aed90e709c5",
      "system": {
        "warnings": []
      }
    }
  }
}

[ ] model_id=client.repository.get_model_id(model_details)
    model_id
    '5bc7565d-65bc-41bb-aea3-5678fe7e5592'

```

```

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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