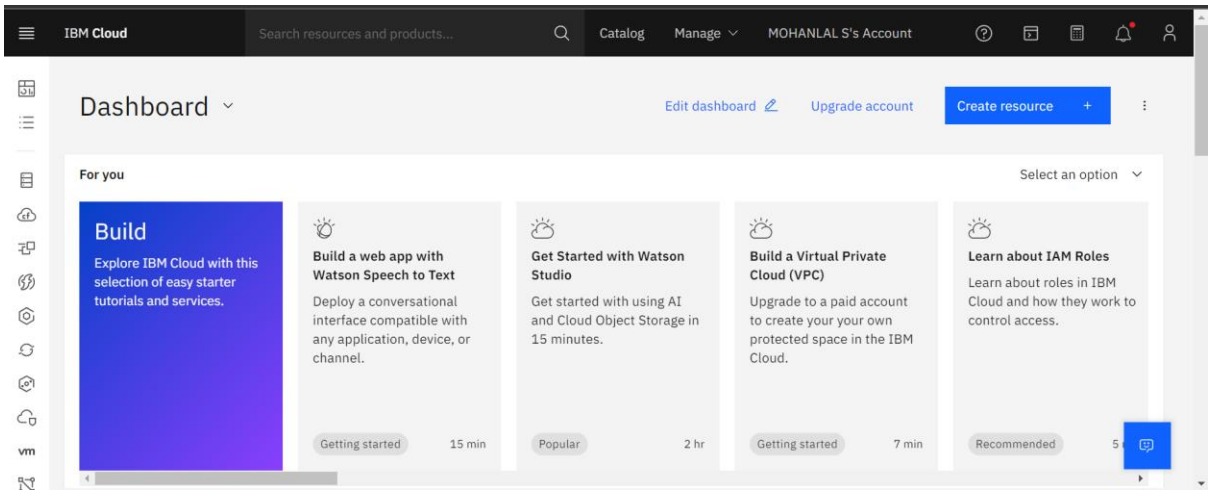
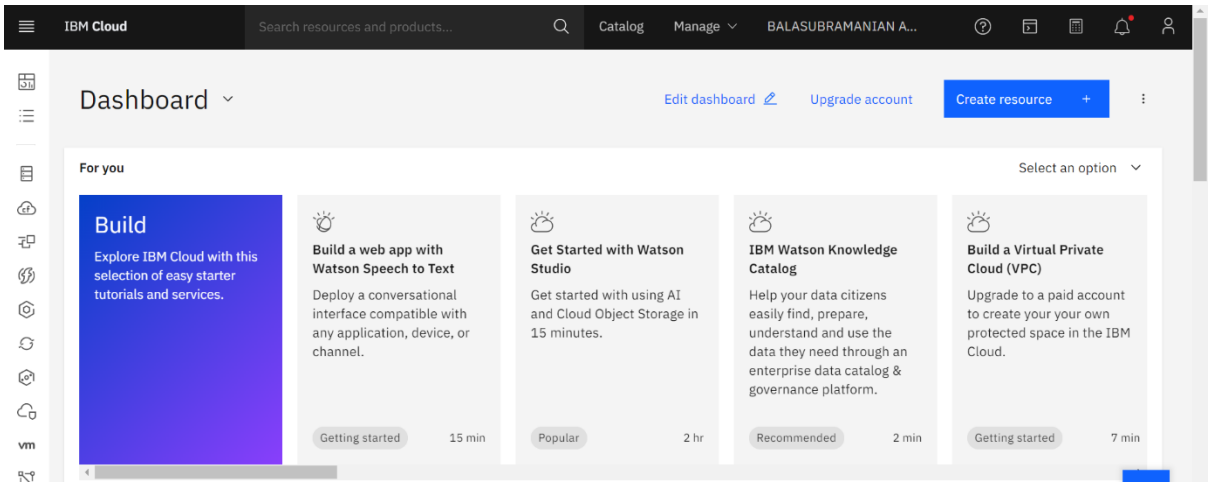
SPRINT 4

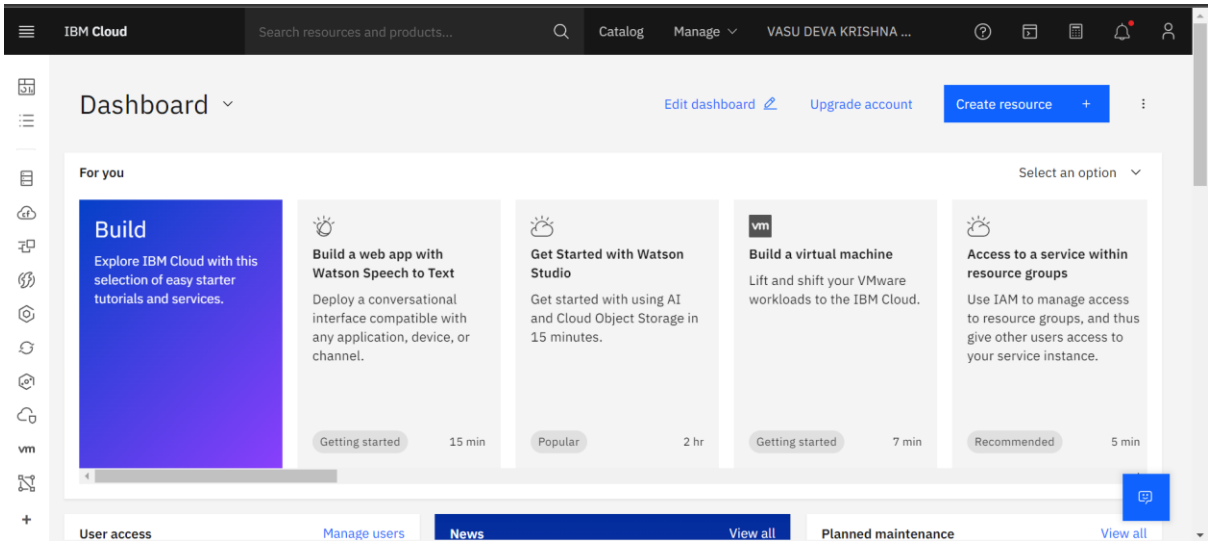
Train The Model On IBM

Team ID	PNT2022TMID51161
Project Name	AI-powered Nutrition Analyzer for Fitness Enthusiasts

Register For IBM Cloud:






IBM Cloud
Search resources and products...
Catalog
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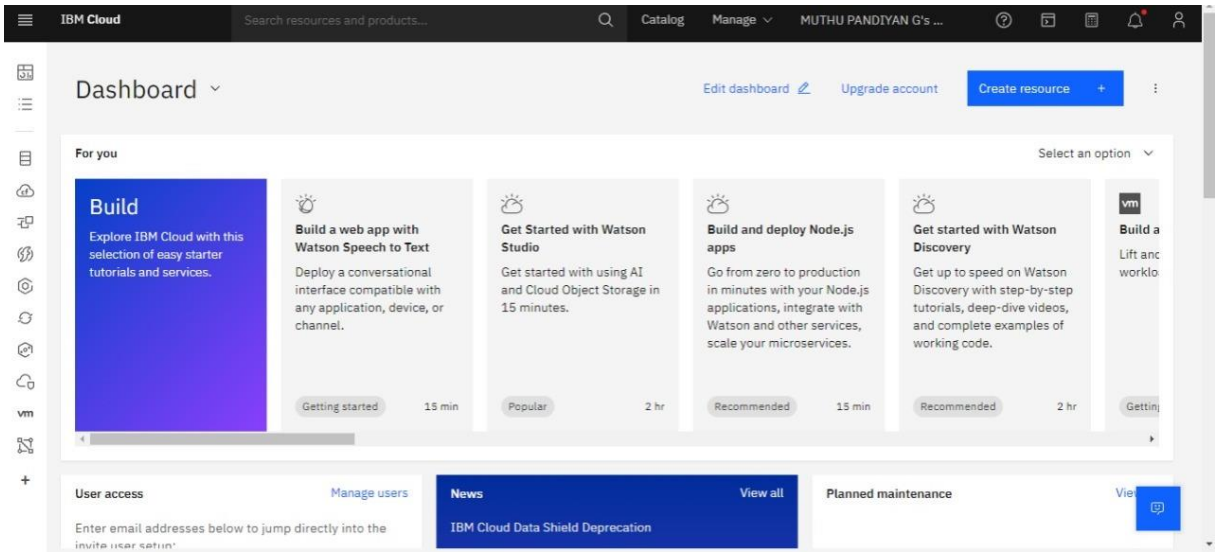
VASU DEVA KRISHNA ...
Dashboard
Edit dashboard
Upgrade account
Create resource
For you
Select an option
Build
Explore IBM Cloud with this selection of easy starter tutorials and services.
Build a web app with Watson Speech to Text
Deploy a conversational interface compatible with any application, device, or channel.
Getting started
15 min
Get Started with Watson Studio
Get started with using AI and Cloud Object Storage in 15 minutes.
Popular
2 hr
Build a virtual machine
Lift and shift your VMware workloads to the IBM Cloud.
Getting started
7 min
Access to a service within resource groups
Use IAM to manage access to resource groups, and thus give other users access to your service instance.
Recommended
5 min
User access
Manage users
News
View all
Planned maintenance
View all


IBM Cloud
Search resources and products...
Catalog
Manage
MUTHU PANDIYAN G's ...
Dashboard
Edit dashboard
Upgrade account
Create resource
For you
Select an option
Build
Explore IBM Cloud with this selection of easy starter tutorials and services.
Build a web app with Watson Speech to Text
Deploy a conversational interface compatible with any application, device, or channel.
Getting started
15 min
Get Started with Watson Studio
Get started with using AI and Cloud Object Storage in 15 minutes.
Popular
2 hr
Build and deploy Node.js apps
Go from zero to production in minutes with your Node.js applications, integrate with Watson and other services, scale your microservices.
Recommended
15 min
Get started with Watson Discovery
Get up to speed on Watson Discovery with step-by-step tutorials, deep-dive videos, and complete examples of working code.
Recommended
2 hr
User access
Manage users
Enter email addresses below to jump directly into the
News
View all
IBM Cloud Data Shield Deprecation
Planned maintenance

Train Model On IBM

In [50]:
```
pwd
```

Out[50]:
```
'/home/wsuser/work'
```

In [51]:
```
!pip install keras
!pip install tensorflow
```

```
Requirement already satisfied: keras in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.0)
Requirement already satisfied: tensorflow in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.2)
Requirement already satisfied: opt-einsum>=2.3.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.3.0)
Requirement already satisfied: keras-preprocessing>=1.1.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.1.2)
Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.21.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.23.1)
Requirement already satisfied: wrapt>=1.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.12.1)
Requirement already satisfied: google-pasta>=0.1.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.2.0)
Requirement already satisfied: h5py>=2.9.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.2.1)
Requirement already satisfied: grpcio<2.0,>=1.24.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.42.0)
Requirement already satisfied: gast<0.5.0,>=0.2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.4.0)
Requirement already satisfied: tensorflow-estimator<2.8,~=2.7.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
Requirement already satisfied: flatbuffers<3.0,>=1.12 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.0)
Requirement already satisfied: keras<2.8,>=2.7.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
Requirement already satisfied: absl-py>=0.4.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.12.0)
Requirement already satisfied: tensorboard~=2.7 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)
Requirement already satisfied: typing-extensions>=3.6.6 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (4.1.1)
Requirement already satisfied: astunparse>=1.6.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.6.3)
Requirement already satisfied: numpy>=1.14.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.20.3)
Requirement already satisfied: protobuf>=3.9.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.19.1)
```

In [52]:
```
import os, types
import pandas as pd
from botocore.client import Config
import ibm_boto3

def __iter__(self): return 0

# @hidden_cell
# The following code accesses a file in your IBM Cloud Object Storage. It includes your credentials.
# You might want to remove those credentials before you share the notebook.
cos_client = ibm_boto3.client(service_name='s3',
    ibm_api_key_id='aX6G_3-rKT8zqbjOMZjtGUPNDvDoCoE7Ms-Fe-0LITqr',
    ibm_auth_endpoint="https://iam.cloud.ibm.com/oidc/token",
    config=Config(signature_version='oauth'),
    endpoint_url='https://s3.private.us.cloud-object-storage.appdomain.cloud')

bucket = 'aipoweredtritionanalyzerforfitn-donotdelete-pr-mwavm7mlz3gvz2'
object_key = 'fruitdata.zip'
```

In [53]:
```
from io import BytesIO
import zipfile
unzip=zipfile.ZipFile(BytesIO(streaming_body_1.read()),'r')
file_paths=unzip.namelist()
for path in file_paths:
    unzip.extract(path)
```

In [54]:
```
pwd
```

Out[54]:
```
'/home/wsuser/work'
```

In [55]:
```
import os
filenames = os.listdir('/home/wsuser/work/fruitdata/traindata')
```

In [56]:
```
from keras.preprocessing.image import ImageDataGenerator
```

In [57]:
```
train_datagen = ImageDataGenerator(rescale = 1./255, horizontal_flip = True, shear_range = 0.2, zoom_range = 0.2)
test_datagen = ImageDataGenerator(rescale = 1./255)
```

In [58]:
```
x_train = train_datagen.flow_from_directory("/home/wsuser/work/fruitdata/traindata",target_size=(64,64),batch_size=5,color_mode='rgb',class_mode='sparse')
x_test = train_datagen.flow_from_directory("/home/wsuser/work/fruitdata/testdata",target_size=(64,64),batch_size=5,color_mode='rgb',class_mode='sparse')
```

```
Found 4118 images belonging to 1 classes.
Found 1055 images belonging to 1 classes.
```

In [59]:
```
print(x_train.class_indices)
print(x_test.class_indices)
```

```
{'TRAIN_SET': 0}
{'TEST_SET': 0}
```

In [60]:
```
from collections import Counter as c
c(x_train.labels)
```

Out[60]:
```
Counter({0: 4118})
```

In [61]:
```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Convolution2D, MaxPooling2D,Flatten, Dense
```

In [62]:
```
model = Sequential()
```

```
Non-trainable params: 0
_________________________________________________________________
```

In [32]:
```
classifier.compile(loss = "sparse_categorical_crossentropy", metrics = ["accuracy"], optimizer = 'adam')
```

In [33]:
```
classifier.fit_generator(generator=x_train,steps_per_epoch = len(x_train),epochs=20, validation_data=x_test,validation_steps = len(x_test))
```

```
/tmp/wsuser/ipykernel_164/4293874847.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators.
  classifier.fit_generator(generator=x_train,steps_per_epoch = len(x_train),epochs=20, validation_data=x_test,validation_steps = len(x_test))
Epoch 1/20
824/824 [==============================] - 21s 26ms/step - loss: 0.0016 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 2/20
824/824 [==============================] - 20s 25ms/step - loss: 5.8475e-09 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 3/20
824/824 [==============================] - 20s 25ms/step - loss: 1.2158e-09 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 4/20
824/824 [==============================] - 21s 26ms/step - loss: 1.4764e-09 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 5/20
824/824 [==============================] - 23s 28ms/step - loss: 8.6845e-10 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 6/20
824/824 [==============================] - 21s 26ms/step - loss: 6.0791e-10 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 7/20
824/824 [==============================] - 20s 24ms/step - loss: 8.6845e-11 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 8/20
824/824 [==============================] - 21s 25ms/step - loss: 2.8948e-11 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 9/20
824/824 [==============================] - 21s 25ms/step - loss: 2.0264e-10 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 10/20
824/824 [==============================] - 21s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 11/20
824/824 [==============================] - 21s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 12/20
824/824 [==============================] - 20s 24ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 13/20
824/824 [==============================] - 20s 24ms/step - loss: 2.8948e-11 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 14/20
824/824 [==============================] - 20s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 15/20
824/824 [==============================] - 21s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 16/20
824/824 [==============================] - 21s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 17/20
824/824 [==============================] - 21s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 18/20
824/824 [==============================] - 20s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 19/20
```

In [63]:
```
classifier = Sequential ()
```

In [64]:
```
classifier.add(Convolution2D(32,(3,3),activation = "relu", input_shape  = (64,64,3)))
```

In [65]:
```
classifier.add(MaxPooling2D(pool_size=(2,2)))
```

In [66]:
```
classifier.add(Convolution2D(32,(3,3),activation = "relu"))
```

In [67]:
```
classifier.add(MaxPooling2D(pool_size=(2,2)))
```

In [68]:
```
classifier.add(Flatten())
```

In [69]:
```
classifier.add(Dense(units = 128,activation='relu'))
#classifier.add(Dense(300,activation='relu'))
classifier.add(Dense(units =5, activation ='softmax'))
```

In [70]:
```
classifier.summary()
```

```
Model: "sequential_3"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_2 (Conv2D)           (None, 62, 62, 32)        896

 max_pooling2d_2 (MaxPooling  (None, 31, 31, 32)       0
 2D)

 conv2d_3 (Conv2D)           (None, 29, 29, 32)        9248

 max_pooling2d_3 (MaxPooling  (None, 14, 14, 32)       0
 2D)

 flatten_1 (Flatten)         (None, 6272)              0

 dense_2 (Dense)             (None, 128)               802944

 dense_3 (Dense)             (None, 5)                 645

=================================================================
Total params: 813,733
Trainable params: 813,733
Non-trainable params: 0
```

```
Requirement already satisfied: idna<4,>=2.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->watson-machine-learning-client) (3.3)
Requirement already satisfied: pytz>=2017.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from pandas->watson-machine-learning-client) (2021.3)
Requirement already satisfied: numpy>=1.17.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from pandas->watson-machine-learning-client) (1.20.3)
Installing collected packages: watson-machine-learning-client
Successfully installed watson-machine-learning-client-1.0.391
```

In [77]:
```
from ibm_watson_machine_learning import APIClient
wml_credentials = {
   "url":"https://us-south.ml.cloud.ibm.com",
   "apikey":"TswEaaF03GI-gBzbxLGUKN6H1WHs-JRYCqFwCUCFmJee"
                  }
client = APIClient(wml_credentials)
```

In [78]:
```
client = APIClient(wml_credentials)
```

In [83]:
```
def guid_from_space_name(client, space_name):
    space = client.spaces.get_details()
    return(next(item for item in space['resources'] if item['entity']["name"] == space_name)['metadata']["id"])
```

In [84]:
```
space_uid = guid_from_space_name(client, 'imageclassifier')
print("space UID = " +space_uid)
```

```
space UID = bcc3bd16-7afa-4cdd-a8ee-0593afb05f95
```

In [85]:
```
client.set.default_space(space_uid)
```

Out[85]: 'SUCCESS'

In [86]:
```
client.software_specifications.list()
```

```
------------------------------  ------------------------------------  ----
NAME                            ASSET_ID                              TYPE
default_py3.6                   0062b8c9-8b7d-44a0-a9b9-46c416adcbd9  base
kernel-spark3.2-scala2.12       020d69ce-7ac1-5e68-ac1a-31189867356a  base
pytorch-onnx_1.3-py3.7-edt      069ea134-3346-5748-b513-49120e15d288  base
scikit-learn_0.20-py3.6         09c5a1d0-9c1e-4473-a344-eb7b665ff687  base
spark-mllib_3.0-scala_2.12      09f4cff0-90a7-5899-b9ed-1ef348aebdee  base
pytorch-onnx_rt22.1-py3.9       0b848dd4-e681-5599-be41-b5f6fccc6471  base
ai-function_0.1-py3.6           0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda  base
shiny-r3.6                      0e5e79df-875e-4f24-8ae9-62dcc2148306  base
tensorflow_2.4-py3.7-horovod    1092590a-307d-563d-9b62-4eb7d64b3f22  base
pytorch_1.1-py3.6               10ac12d6-6b30-4ccd-8392-3e922c096a92  base
tensorflow_1.15-py3.6-ddl       111e41b3-de2d-5422-a4d6-bf776828c4b7  base
autoai-kb_rt22.2-py3.10         125b6d9a-5b1f-5e8d-972a-b251688ccf40  base
runtime-22.1-py3.9              12b83a17-24d8-5082-900f-0ab31fbfd3cb  base
```

```
824/824 [==============================] - 20s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 19/20
824/824 [==============================] - 21s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 20/20
824/824 [==============================] - 20s 25ms/step - loss: 0.0000e+00 - accuracy: 1.0000 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
```

Out[33]: <keras.callbacks.History at 0x7f1fd86cd370>

In [46]:
```
classifier.save('Nutrition.h5')
```

In [48]:
```
!tar -zcvf image-classification-model_new.tgz Nutrition.h5
```

```
Nutrition.h5
```

In [71]:
```
ls -1
```

```
AI-Powered
file_new.tgz
fruitdata/
image-classification-model_new.tgz
'Nutrition Analyzer.h5'
Nutrition.h5
```

In [72]:
```
!pip install watson-machine-learning-client --upgrade
```

```
Collecting watson-machine-learning-client
  Downloading watson_machine_learning_client-1.0.391-py3-none-any.whl (538 kB)
     |████████████████████████████████| 538 kB 19.7 MB/s eta 0:00:01
Requirement already satisfied: certifi in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2022.9.24)
Requirement already satisfied: lomond in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (0.3.3)
Requirement already satisfied: ibm-cos-sdk in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2.11.0)
Requirement already satisfied: boto3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.18.21)
Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (0.8.9)
Requirement already satisfied: pandas in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.3.4)
Requirement already satisfied: tqdm in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (4.62.3)
Requirement already satisfied: requests in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2.26.0)
Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.26.7)
Requirement already satisfied: botocore<1.22.0,>=1.21.21 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learning-client) (1.21.41)
Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learning-client) (0.10.0)
Requirement already satisfied: s3transfer<0.6.0,>=0.5.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learning-client) (0.5.0)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from botocore<1.22.0,>=1.21.21->boto3->watson-machine-learning-client) (2.8.2)
Requirement already satisfied: six>=1.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from python-dateutil<3.0.0,>=2.1->botocore<1.22.0,>=1.21.21->boto3->watson-machine-learning-client) (1.15.0)
Requirement already satisfied: ibm-cos-sdk-s3transfer==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk->watson-machine-learning-client) (2.11.0)
Requirement already satisfied: ibm-cos-sdk-core==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk->watson-machine-learning-client) (2.11.0)
Requirement already satisfied: charset-normalizer~=2.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->watson-machine-learning-client) (2.0.4)
Requirement already satisfied: idna<4,>=2.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->watson-machine-learning-client) (3.3)
```

```
autoai-ts_3.8-py3.8             2aa0c932-798f-5ae9-abd6-15e0c2402fb5  base
tensorflow_1.15-py3.6           2b73a275-7cbf-420b-a912-eae7f436e0bc  base
kernel-spark3.3-py3.9           2b7961e2-e3b1-5a8c-a491-482c8368839a  base
pytorch_1.2-py3.6               2c8ef57d-2687-4b7d-acce-01f94976dac1  base
spark-mllib_2.3                 2e51f700-bca0-4b0d-88dc-5c6791338875  base
pytorch-onnx_1.1-py3.6-edt      32983cea-3f32-4400-8965-dde874a8d67e  base
spark-mllib_3.0-py37            36507ebe-8770-55ba-ab2a-eafe787600e9  base
spark-mllib_2.4                 390d21f8-e58b-4fac-9c55-d7ceda621326  base
autoai-ts_rt22.2-py3.10         396b2e83-0953-5b86-9a55-7ce1628a406f  base
xgboost_0.82-py3.6              39e31acd-5f30-41dc-ae44-60233c80306e  base
pytorch-onnx_1.2-py3.6-edt      40589d0e-7019-4e28-8daa-fb03b6f4fe12  base
pytorch-onnx_rt22.2-py3.10      40e73f55-783a-5535-b3fa-0c8b94291431  base
default_r36py38                 41c247d3-45f8-5a71-b065-8580229facf0  base
autoai-ts_rt22.1-py3.9          4269d26e-07ba-5d40-8f66-2d495b0c71f7  base
autoai-obm_3.0                  42b92e18-d9ab-567f-988a-4240ba1ed5f7  base
pmml-3.0_4.3                    493bcb95-16f1-5bc5-bee8-81b8af80e9c7  base
spark-mllib_2.4-r_3.6           49403dff-92e9-4c87-a3d7-a42d0021c095  base
xgboost_0.90-py3.6              4ff8d6c2-1343-4c18-85e1-689c965304d3  base
pytorch-onnx_1.1-py3.6          50f95b2a-bc16-43bb-bc94-b0bed208c60b  base
autoai-ts_3.9-py3.8             52c57136-80fa-572e-8728-a5e7cbb42cde  base
spark-mllib_2.4-scala_2.11      55a70f99-7320-4be5-9fb9-9edb5a443af5  base
spark-mllib_3.0                 5c1b0ca2-4977-5c2e-9439-ffd44ea8ffe9  base
autoai-obm_2.0                  5c2e37fa-80b8-5e77-840f-d912469614ee  base
spss-modeler_18.1               5c3cad7e-507f-4b2a-a9a3-ab53a21dee8b  base
cuda-py3.8                      5d3232bf-c86b-5df4-a2cd-7bb870a1cd4e  base
autoai-kb_3.1-py3.7             632d4b22-10aa-5180-88f0-f52dfb6444d7  base
pytorch-onnx_1.7-py3.8          634d3cdc-b562-5bf9-a2d4-ea90a478456b  base
------------------------------  ------------------------------------  ----
Note: Only first 50 records were displayed. To display more use 'limit' parameter.
```

In [98]:
```
software_spec_uid = client.software_specifications.get_uid_by_name("tensorflow_1.15-py3.6")
software_spec_uid
```

Out[98]: '2b73a275-7cbf-420b-a912-eae7f436e0bc'

In [ ]:
```
model_details = client.repository.store_model(model='image-classification-model_new.tgz',meta_props={
    client.repository.ModelMetaNames.NAME:"CNN",
    client.repository.ModelMetaNames.TYPE:"keras_2",
    client.repository.ModelMetaNames.SOFTWARE_SPEC_UID:software_spec_uid}
                                              )
model_id = client.repository.get_model_uid(model_details)
```

In [ ]:
```
model_id
```

In [ ]:
```
```