# Team ID:PNT2022TMlD50173

**Importing The ImageDataGenerator Library**

```python
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='QVsKoX6yNRLn8Qv_RWlO4N-PlH8ddMdZyPPjLiIW1oz6',
    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 = 'imageclassification-donotdelete-pr-ncc5wgfie3fmsd'
object_key = 'Dataset.zip'

streaming_body_2 = cos_client.get_object(Bucket=bucket,
Key=object_key)['Body']

# Your data file was loaded into a botocore.response.StreamingBody object.
# Please read the documentation of ibm_boto3 and pandas to learn more about
the possibilities to load the data.
# ibm_boto3 documentation: https://ibm.github.io/ibm-cos-sdk-python/
# pandas documentation: http://pandas.pydata.org/
```

```python
from io import BytesIO
import zipfile
unzip=zipfile.ZipFile(BytesIO(streaming_body_2.read()),'r')
file_paths=unzip.namelist()
for path in file_paths:
    unzip.extract(path)
```

```python
pwd
```

```
'/home/wsuser/work'
```

```python
import os
filenames=os.listdir('/home/wsuser/work/Dataset/train_set')
```

```python
!pip install libgl1-mesa-dev
import tensorflow as tf
import numpy as np
from tensorflow import keras
import os
from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.preprocessing import image
```

```
ERROR: Could not find a version that satisfies the requirement libgl1-mesa-
dev (from versions: none)
ERROR: No matching distribution found for libgl1-mesa-dev
```

**Define the parameters/arguments for ImageDataGenerator class**

```python
train=ImageDataGenerator(rescale=1./255,
                            shear_range=0.2,
                            rotation_range=180,
                            zoom_range=0.2,
                            horizontal_flip=True)
train = ImageDataGenerator(rescale=1/255)
test = ImageDataGenerator(rescale=1/255)
```

**Applying ImageDataGenerator functionality to trainset**

```python
x_train = train.flow_from_directory("/home/wsuser/work/Dataset/train_set",
                                        target_size=(64,64),
                                        batch_size = 32,
                                        class_mode = 'binary' )
```

Found 436 images belonging to 2 classes.

**Applying ImageDataGenerator functionality to testset**

```python
x_test = test.flow_from_directory("/home/wsuser/work/Dataset/test_set",
                                        target_size=(64,64),
                                        batch_size = 32,
                                        class_mode = 'binary' )
```

Found 121 images belonging to 2 classes.

```python
x_test.class_indices
```

```
{'forest': 0, 'with fire': 1}
```

**Import model building libraries**

```python
#to define linear initialisation import sequential
from keras.models import Sequential
#to add layer import Dense
from keras.layers import Dense
#to create convolution kernel import convolution2D
from keras.layers import Convolution2D
#import Maxpooling layer
from keras.layers import MaxPooling2D
#import flatten layer
from keras.layers import Flatten
import warnings
warnings.filterwarnings('ignore')
```

**Initializing the model**

```python
model =Sequential()
```

**Add CNN Layer**

```python
model.add(Convolution2D(32,(3,3),input_shape=(64,64,3),activation='relu'))
#add maxpooling layers
model.add(MaxPooling2D(pool_size=(2,2)))
#add faltten layer
model.add(Flatten())
```

**Add Hidden Layer**

```python
#add hidden layers
model.add(Dense(150,activation='relu'))
#add output layer
```

```python
model.add(Dense(1,activation='sigmoid'))
```

**Configure the learning process**

```python
model.compile(loss = 'binary_crossentropy',
              optimizer = "adam",
              metrics = ["accuracy"])
```

**Train the model**

```python
model.fit_generator(x_train,steps_per_epoch=14,epochs=5,validation_data=x_t
est,validation_steps=20)
```

```
Epoch 1/5
14/14 [==============================] - ETA: 0s - loss: 0.7689 - accuracy:
0.6628WARNING:tensorflow:Your input ran out of data; interrupting training.
Make sure that your dataset or generator can generate at least
`steps_per_epoch * epochs` batches (in this case, 20 batches). You may need
to use the repeat() function when building your dataset.
14/14 [==============================] - 21s 1s/step - loss: 0.7689 -
accuracy: 0.6628 - val_loss: 0.3151 - val_accuracy: 0.8678
Epoch 2/5
14/14 [==============================] - 15s 1s/step - loss: 0.2759 -
accuracy: 0.8853
Epoch 3/5
14/14 [==============================] - 14s 1s/step - loss: 0.1619 -
accuracy: 0.9472
Epoch 4/5
14/14 [==============================] - 14s 1s/step - loss: 0.1192 -
accuracy: 0.9541
Epoch 5/5
14/14 [==============================] - 14s 1s/step - loss: 0.1087 -
accuracy: 0.9633
```

**Save The Model**

```python
model.save("/home/wsuser/work/archive(1)/forest1.h5")
```

**Predictions**

```python
predictions = model.predict(x_test)
predictions = np.round(predictions)
```

```python
predictions
```

```
array([[1.],
       [1.],
       [1.],
       [0.],
       [1.],
       [1.],
       [1.],
       [0.],
       [1.],
       [0.],
       [1.],
       [0.],
       [1.],
       [0.],
       [0.],
       [1.],
       [1.],
```

```
[0.],
[1.],
[1.],
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```

```
       [0.],
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       [1.],
       [0.],
       [0.],
       [1.],
       [1.],
       [0.],
       [0.],
       [0.],
       [0.],
       [1.]], dtype=float32)
```

```
print(len(predictions))
```

```
121
```

```
#import load_model from keras.model
from keras.models import load_model
#import image class from keras
import tensorflow as tf
from tensorflow.keras.preprocessing import image
#import numpy
import numpy as np
#import cv2
```

```
#load the saved model
model = load_model("/home/wsuser/work/archive(1)/forest1.h5")
```

```
def predictImage(filename):
```

```python
    img1 = image.load_img(filename,target_size=(64,64))
    Y = image.img_to_array(img1)
    X = np.expand_dims(Y,axis=0)
    val = model.predict(X)
    print(val)
    if val == 1:
        print(" fire")
    elif val == 0:
        print("no fire")
```

```python
predictImage("/home/wsuser/work/Dataset/test_set/with
fire/19464620_401.jpg")
```

```
WARNING:tensorflow:5 out of the last 12 calls to .predict_function at
0x7f984fe019d0> triggered tf.function retracing. Tracing is expensive and
the excessive number of tracings could be due to (1) creating @tf.function
repeatedly in a loop, (2) passing tensors with different shapes, (3)
passing Python objects instead of tensors. For (1), please define your
@tf.function outside of the loop. For (2), @tf.function has
experimental_relax_shapes=True option that relaxes argument shapes that can
avoid unnecessary retracing. For (3), please refer to
https://www.tensorflow.org/guide/function#controlling_retracing and
https://www.tensorflow.org/api_docs/python/tf/function for  more details.
[[1.]]
 fire
```

**OpenCV For Video Processing**

```python
pip install twilio
```

```
Collecting twilio
  Downloading twilio-7.15.2-py2.py3-none-any.whl (1.4 MB)
     |████████████████████████████████| 1.4 MB 16.7 MB/s eta 0:00:01
Requirement already satisfied: requests>=2.0.0 in /opt/conda/envs/Python-
3.9/lib/python3.9/site-packages (from twilio) (2.26.0)
Requirement already satisfied: PyJWT<3.0.0,>=2.0.0 in
/opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from twilio)
(2.4.0)
Requirement already satisfied: pytz in /opt/conda/envs/Python-
3.9/lib/python3.9/site-packages (from twilio) (2021.3)
Requirement already satisfied: idna<4,>=2.5 in /opt/conda/envs/Python-
3.9/lib/python3.9/site-packages (from requests>=2.0.0->twilio) (3.3)
Requirement already satisfied: certifi>=2017.4.17 in
/opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from
requests>=2.0.0->twilio) (2022.9.24)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in
/opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from
requests>=2.0.0->twilio) (1.26.7)
Requirement already satisfied: charset-normalizer~=2.0.0 in
/opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from
requests>=2.0.0->twilio) (2.0.4)
Installing collected packages: twilio
Successfully installed twilio-7.15.2
Note: you may need to restart the kernel to use updated packages.
```

```python
pip install playsound
```

```
Collecting playsound
  Downloading playsound-1.3.0.tar.gz (7.7 kB)
Building wheels for collected packages: playsound
  Building wheel for playsound (setup.py) ... done
```

```
  Created wheel for playsound: filename=playsound-1.3.0-py3-none-any.whl
size=7037
sha256=7a14e5d7212967bf1952d7558b36640342f7d1b687b5aa9dc5b0e950f2e73b31
  Stored in directory:
/tmp/wsuser/.cache/pip/wheels/ba/39/54/c8f7ff9a88a644d3c58b4dec802d90b79a2e
0fb2a6b884bf82
Successfully built playsound
Installing collected packages: playsound
Successfully installed playsound-1.3.0
Note: you may need to restart the kernel to use updated packages.
```

In [112]:

```python
#import opencv librariy
#import cv2
#import numpy
import numpy as np
#import image function from keras
from keras.preprocessing import image
#import load_model from keras
from keras.models import load_model
#import client from twilio API
from twilio.rest import Client
#imort playsound package
from playsound import playsound
```

In [113]:

```python
#load the saved model
model = load_model(r'/home/wsuser/work/archive(1)/forest1.h5')
#define the features
name = ['forest','with forest']
```

**Creating An Account In Twilio Service**

In [114]:

```python
account_sid='ACfb4e6d0e7b0d25def63044919f1b96e3'
auth_token='f9ae4fc4a617a527da8672e97eefb2d8'
client=Client(account_sid,auth_token)
message=client.messages \
.create(
    body='Forest Fire is detected, stay alert',
    from_='+1 302 248 4366',
    to='+91 99400 12164'
)
print(message.sid)
```

```
SMfa58e2bf0ede24f765cd7bc345ca795d
```

**Sending Alert Message**

In [81]:

```
pip install pygobject
```

```
Collecting pygobject
  Downloading PyGObject-3.42.2.tar.gz (719 kB)
     |████████████████████████████████| 719 kB 9.3 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-emeystgt/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-lkmf16by/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
       cwd: None
  Complete output (38 lines):
  Collecting setuptools
    Downloading setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
```

```
    Downloading wheel-0.38.4-py3-none-any.whl (36 kB)
  Collecting pycairo
    Downloading pycairo-1.21.0.tar.gz (340 kB)
    Installing build dependencies: started
    Installing build dependencies: finished with status 'done'
    Getting requirements to build wheel: started
    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
      Preparing wheel metadata: finished with status 'done'
  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmp6f_pv7zl_in_process.py build_wheel /tmp/wsuser/tmp9ugp5t8u
         cwd: /tmp/wsuser/pip-install-
g0nlk595/pycairo_8ee0a71e39c14024bc3c99a74592e9b4
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly
  ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/fe/40/9afaeb8d3b453fb8596fcb6c7bc2b
64e434868c91eda19955742778eff74/PyGObject-
3.42.2.tar.gz#sha256=21524cef33100c8fd59dc135948b703d79d303e368ce71fa60521c
c971cd8aa7 (from https://pypi.org/simple/pygobject/) (requires-
python:>=3.6, <4). Command errored out with exit status 1:
/opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-standalone-pip-
emeystgt/__env_pip__.zip/pip install --ignore-installed --no-user --prefix
/tmp/wsuser/pip-build-env-lkmf16by/overlay --no-warn-script-location --no-
binary :none: --only-binary :none: -i https://pypi.org/simple -- setuptools
wheel pycairo Check the logs for full command output.
  Downloading PyGObject-3.42.1.tar.gz (718 kB)
     |████████████████████████████████| 718 kB 51.7 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-nxupggha/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-q_zdbpt2/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
       cwd: None
```

```
  Complete output (38 lines):
  Collecting setuptools
    Using cached setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
    Using cached wheel-0.38.4-py3-none-any.whl (36 kB)
  Collecting pycairo
    Using cached pycairo-1.21.0.tar.gz (340 kB)
    Installing build dependencies: started
    Installing build dependencies: finished with status 'done'
    Getting requirements to build wheel: started
    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
      Preparing wheel metadata: finished with status 'done'
  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmp500lv4hx_in_process.py build_wheel /tmp/wsuser/tmppdsziofg
         cwd: /tmp/wsuser/pip-install-
oav7v438/pycairo_82221e31165f4f099211c145cc82388b
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly
  ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/41/d0/7eaebdca0723b267b96a8b7de2743
cc223fbb47f651346b3e9b768acf8dd/PyGObject-
3.42.1.tar.gz#sha256=80d6a3ad1630e9d1edf31b9e9fad9a894c57e18545a3c95ef0044a
c4042b8620 (from https://pypi.org/simple/pygobject/) (requires-
python:>=3.6, <4). Command errored out with exit status 1:
/opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-standalone-pip-
nxupggha/__env_pip__.zip/pip install --ignore-installed --no-user --prefix
/tmp/wsuser/pip-build-env-q_zdbpt2/overlay --no-warn-script-location --no-
binary :none: --only-binary :none: -i https://pypi.org/simple -- setuptools
wheel pycairo Check the logs for full command output.
  Downloading PyGObject-3.42.0.tar.gz (716 kB)
     |████████████████████████████████| 716 kB 56.3 MB/s eta 0:00:01
|██████████████████████████████         | 665 kB 56.3 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
```

```
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-c69rxedh/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-xhdcyjv_/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
       cwd: None
  Complete output (38 lines):
  Collecting setuptools
    Using cached setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
    Using cached wheel-0.38.4-py3-none-any.whl (36 kB)
  Collecting pycairo
    Using cached pycairo-1.21.0.tar.gz (340 kB)
    Installing build dependencies: started
    Installing build dependencies: finished with status 'done'
    Getting requirements to build wheel: started
    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
      Preparing wheel metadata: finished with status 'done'
  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmpqje2d2h3_in_process.py build_wheel /tmp/wsuser/tmpgm5ricg_
         cwd: /tmp/wsuser/pip-install-
7lii05u2/pycairo_bd74e7eadd29426fae493791d830597a
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly
  ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/cc/72/48cfdd7a0caf3c27f392d2657731a
c6f7c3c1c0a60bfeba3e1ba9ffa7ba9/PyGObject-
3.42.0.tar.gz#sha256=b9803991ec0b0b4175e81fee0ad46090fa7af438fe169348a9b18a
e53447afcd (from https://pypi.org/simple/pygobject/) (requires-
python:>=3.6, <4). Command errored out with exit status 1:
/opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-standalone-pip-
c69rxedh/__env_pip__.zip/pip install --ignore-installed --no-user --prefix
/tmp/wsuser/pip-build-env-xhdcyjv_/overlay --no-warn-script-location --no-
binary :none: --only-binary :none: -i https://pypi.org/simple -- setuptools
wheel pycairo Check the logs for full command output.
```

```
  Downloading PyGObject-3.40.1.tar.gz (714 kB)
     |████████████████████████████████| 714 kB 56.6 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-upcmrgkj/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-vssdf0vc/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
       cwd: None
  Complete output (38 lines):
  Collecting setuptools
    Using cached setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
    Using cached wheel-0.38.4-py3-none-any.whl (36 kB)
  Collecting pycairo
    Using cached pycairo-1.21.0.tar.gz (340 kB)
    Installing build dependencies: started
    Installing build dependencies: finished with status 'done'
    Getting requirements to build wheel: started
    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
      Preparing wheel metadata: finished with status 'done'
  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmpldzz1u7p_in_process.py build_wheel /tmp/wsuser/tmpagh8im7d
         cwd: /tmp/wsuser/pip-install-
se5z7j4o/pycairo_eda2926bd0a343d189cf6d2ff0781ed7
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly
  ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/51/2f/4d5d5afb7000b9151e33952b59163
c9389bd867ac6fe85d62f85831fa061/PyGObject-
3.40.1.tar.gz#sha256=6fb599aa59ceb9dd05fafb0d72b3862943e7d5e85c8ef6c74856bc
6d4321cbab (from https://pypi.org/simple/pygobject/) (requires-
python:>=3.6, <4). Command errored out with exit status 1:
/opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-standalone-pip-
```

```
upcmrgkj/__env_pip__.zip/pip install --ignore-installed --no-user --prefix
/tmp/wsuser/pip-build-env-vssdf0vc/overlay --no-warn-script-location --no-
binary :none: --only-binary :none: -i https://pypi.org/simple -- setuptools
wheel pycairo Check the logs for full command output.
  Downloading PyGObject-3.40.0.tar.gz (714 kB)
     |████████████████████████████████| 714 kB 63.1 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-6jz5e22z/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-6_7hdgvd/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
       cwd: None
  Complete output (38 lines):
  Collecting setuptools
    Using cached setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
    Using cached wheel-0.38.4-py3-none-any.whl (36 kB)
  Collecting pycairo
    Using cached pycairo-1.21.0.tar.gz (340 kB)
    Installing build dependencies: started
    Installing build dependencies: finished with status 'done'
    Getting requirements to build wheel: started
    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
      Preparing wheel metadata: finished with status 'done'
  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmpevdp83t__in_process.py build_wheel /tmp/wsuser/tmpb55sh2ws
         cwd: /tmp/wsuser/pip-install-
5_zcoacc/pycairo_e5999875c1264e48b390e0d4f4eb93e5
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly
  ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/a0/fa/0cfaa64ad7a4cd94fd74b698fcc89
87ed780fce1651fecc6604f86f604cd/PyGObject-
```

3.40.0.tar.gz#sha256=98d83f71e6313dadc29793450fec23b2eaa5c3f1c4b073d0a4f9c3
1b5cdb5fca (from https://pypi.org/simple/pygobject/) (requires-
python:>=3.6, <4). Command errored out with exit status 1:
/opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-standalone-pip-
6jz5e22z/__env_pip__.zip/pip install --ignore-installed --no-user --prefix
/tmp/wsuser/pip-build-env-6_7hdgvd/overlay --no-warn-script-location --no-
binary :none: --only-binary :none: -i https://pypi.org/simple -- setuptools
wheel pycairo Check the logs for full command output.
  Downloading PyGObject-3.38.0.tar.gz (712 kB)
     |████████████████████████████████| 712 kB 38.4 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-h2x28x3g/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-xv9hjs9n/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
       cwd: None
  Complete output (38 lines):
  Collecting setuptools
    Using cached setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
    Using cached wheel-0.38.4-py3-none-any.whl (36 kB)
  Collecting pycairo
    Using cached pycairo-1.21.0.tar.gz (340 kB)
    Installing build dependencies: started
    Installing build dependencies: finished with status 'done'
    Getting requirements to build wheel: started
    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
      Preparing wheel metadata: finished with status 'done'
  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmprvky_koj_in_process.py build_wheel /tmp/wsuser/tmp6hmoleo0
         cwd: /tmp/wsuser/pip-install-
pusq3qk1/pycairo_ee979114e653462197d7062856ffd7ee
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly

```
    ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/3a/a7/de282a4aaedba59d60a895a7821e6
497b39cbdfa94a352776ff45ffc6e6f/PyGObject-
3.38.0.tar.gz#sha256=051b950f509f2e9f125add96c1493bde987c527f7a0c15a1f7b69d
6d1c3cd8e6 (from https://pypi.org/simple/pygobject/) (requires-
python:>=3.5, <4). Command errored out with exit status 1:
/opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-standalone-pip-
h2x28x3g/__env_pip__.zip/pip install --ignore-installed --no-user --prefix
/tmp/wsuser/pip-build-env-xv9hjs9n/overlay --no-warn-script-location --no-
binary :none: --only-binary :none: -i https://pypi.org/simple -- setuptools
wheel pycairo Check the logs for full command output.
  Downloading PyGObject-3.36.1.tar.gz (716 kB)
     |████████████████████████████████| 716 kB 58.2 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-utcgu2y3/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-kmc2o59p/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
       cwd: None
  Complete output (38 lines):
  Collecting setuptools
    Using cached setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
    Using cached wheel-0.38.4-py3-none-any.whl (36 kB)
  Collecting pycairo
    Using cached pycairo-1.21.0.tar.gz (340 kB)
    Installing build dependencies: started
    Installing build dependencies: finished with status 'done'
    Getting requirements to build wheel: started
    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
      Preparing wheel metadata: finished with status 'done'
  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmpbn0c6t2p_in_process.py build_wheel /tmp/wsuser/tmpsrncjz71
         cwd: /tmp/wsuser/pip-install-
c6xj0d2d/pycairo_9aee589e2f774ceeae669ae25ae967ad
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
```

```
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly
  ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/93/41/bf9ab8929f51dac2979ae81bb0947
28bacee3ceb049def72d3fc1bcb4241/PyGObject-
3.36.1.tar.gz#sha256=012a589aec687bfa809a1ff9f5cd775dc7f6fcec1a6bc7fe88e100
2a68f8ba34 (from https://pypi.org/simple/pygobject/) (requires-
python:>=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*, !=3.4.*, <4). Command
errored out with exit status 1: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/pip-standalone-pip-utcgu2y3/__env_pip__.zip/pip install --
ignore-installed --no-user --prefix /tmp/wsuser/pip-build-env-
kmc2o59p/overlay --no-warn-script-location --no-binary :none: --only-binary
:none: -i https://pypi.org/simple -- setuptools wheel pycairo Check the
logs for full command output.
  Downloading PyGObject-3.36.0.tar.gz (714 kB)
     |████████████████████████████████| 714 kB 66.5 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-_39n1cer/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-ntifvcvj/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
      cwd: None
  Complete output (38 lines):
  Collecting setuptools
    Using cached setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
    Using cached wheel-0.38.4-py3-none-any.whl (36 kB)
  Collecting pycairo
    Using cached pycairo-1.21.0.tar.gz (340 kB)
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    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
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  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmpmvnl7yum_in_process.py build_wheel /tmp/wsuser/tmpjrjxxj86
        cwd: /tmp/wsuser/pip-install-
9p43s_kb/pycairo_4e1056e04593421ead04d7dc96ed32f6
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
```

```
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly
  ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/3e/b5/f4fd3351ed074aeeae30bff71428f
38bc42187e34c44913239a9dc85a7fc/PyGObject-
3.36.0.tar.gz#sha256=b97f570e55017fcd3732164811f24ecf63983a4834f61b55b0aaf6
4ecefac856 (from https://pypi.org/simple/pygobject/) (requires-
python:>=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*, !=3.4.*, <4). Command
errored out with exit status 1: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/pip-standalone-pip-_39n1cer/__env_pip__.zip/pip install --
ignore-installed --no-user --prefix /tmp/wsuser/pip-build-env-
ntifvcvj/overlay --no-warn-script-location --no-binary :none: --only-binary
:none: -i https://pypi.org/simple -- setuptools wheel pycairo Check the
logs for full command output.
  Downloading PyGObject-3.34.0.tar.gz (699 kB)
     |████████████████████████████████| 699 kB 57.4 MB/s eta 0:00:01
  Installing build dependencies ... error
  ERROR: Command errored out with exit status 1:
   command: /opt/conda/envs/Python-3.9/bin/python /tmp/wsuser/pip-
standalone-pip-62lfrrwt/__env_pip__.zip/pip install --ignore-installed --
no-user --prefix /tmp/wsuser/pip-build-env-w_5uvqoa/overlay --no-warn-
script-location --no-binary :none: --only-binary :none: -i
https://pypi.org/simple -- setuptools wheel pycairo
       cwd: None
  Complete output (38 lines):
  Collecting setuptools
    Using cached setuptools-65.5.1-py3-none-any.whl (1.2 MB)
  Collecting wheel
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    Getting requirements to build wheel: finished with status 'done'
      Preparing wheel metadata: started
      Preparing wheel metadata: finished with status 'done'
  Building wheels for collected packages: pycairo
    Building wheel for pycairo (PEP 517): started
    Building wheel for pycairo (PEP 517): finished with status 'error'
    ERROR: Command errored out with exit status 1:
     command: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/tmpjkryarup_in_process.py build_wheel /tmp/wsuser/tmpy7low2cn
         cwd: /tmp/wsuser/pip-install-
546gq7ve/pycairo_830bac311023487993b77f80ea531ad1
    Complete output (15 lines):
    running bdist_wheel
    running build
    running build_py
    creating build
    creating build/lib.linux-x86_64-cpython-39
    creating build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/__init__.py -> build/lib.linux-x86_64-cpython-39/cairo
```

```
    copying cairo/__init__.pyi -> build/lib.linux-x86_64-cpython-39/cairo
    copying cairo/py.typed -> build/lib.linux-x86_64-cpython-39/cairo
    running build_ext
    Package cairo was not found in the pkg-config search path.
    Perhaps you should add the directory containing `cairo.pc'
    to the PKG_CONFIG_PATH environment variable
    Package 'cairo', required by 'virtual:world', not found
    Command '['pkg-config', '--print-errors', '--exists', 'cairo >=
1.15.10']' returned non-zero exit status 1.
    ----------------------------------------
    ERROR: Failed building wheel for pycairo
  Failed to build pycairo
  ERROR: Could not build wheels for pycairo which use PEP 517 and cannot be
installed directly
    ----------------------------------------
WARNING: Discarding
https://files.pythonhosted.org/packages/46/8a/b183f3edc812d4d28c8b671a922b5
bc2863be5d38c56b3ad9155815e78dd/PyGObject-
3.34.0.tar.gz#sha256=2acb0daf2b3a23a90f52066cc23d1053339fee2f5f7f4275f8baa3
704ae0c543 (from https://pypi.org/simple/pygobject/) (requires-
python:>=2.7, !=3.0.*, !=3.1.*, !=3.2.*, !=3.3.*, !=3.4.*, <4). Command
errored out with exit status 1: /opt/conda/envs/Python-3.9/bin/python
/tmp/wsuser/pip-standalone-pip-62lfrrwt/__env_pip__.zip/pip install --
ignore-installed --no-user --prefix /tmp/wsuser/pip-build-env-
w_5uvqoa/overlay --no-warn-script-location --no-binary :none: --only-binary
:none: -i https://pypi.org/simple -- setuptools wheel pycairo Check the
logs for full command output.
  Downloading PyGObject-3.32.2.tar.gz (698 kB)
     |████████████████████████████████| 698 kB 39.5 MB/s eta 0:00:01
^C
  Installing build dependencies ... canceled
ERROR: Operation cancelled by user
Note: you may need to restart the kernel to use updated packages.
```

In [115]:

```python
def message(val):
    if val==1:
        from twilio.rest import Client
        print('Forest fire')
        account_sid='ACfb4e6d0e7b0d25def63044919f1b96e3'
        auth_token='f9ae4fc4a617a527da8672e97eefb2d8'
        client=Client(account_sid,auth_token)
        message=client.messages \
          .create(
             body='forest fire is detected, stay alert',
             #use twilio free number
             from_='+1 302 248 4366',
             #to number
             to='+91 99400 12164')
        print(message.sid)
        print("Fire detected")
        print("SMS Sent!")
    elif val==0:
        print('No Fire')
```

In [116]:

```python
from matplotlib import pyplot as plt
#import load model from keras.model
from keras.models import load_model
#import image from keras
from tensorflow.keras.preprocessing import image
img1 = image.load_img('/home/wsuser/work/Dataset/test_set/with
fire/Wild_fires.jpg',target_size=(64,64))
```
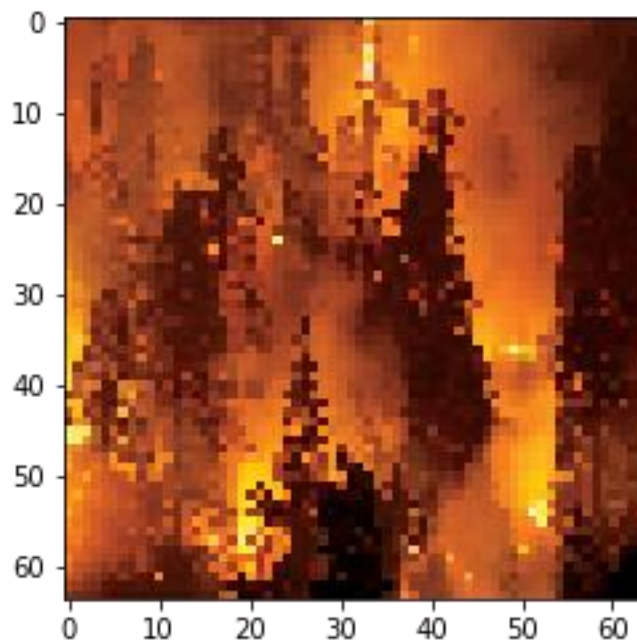
```
Y = image.img_to_array(img1)
x = np.expand_dims(Y,axis=0)
val = model.predict(x)
plt.imshow(img1)
plt.show()
message(val)
```

WARNING:tensorflow:6 out of the last 13 calls to .predict_function at
0x7f984fe36820> triggered tf.function retracing. Tracing is expensive and
the excessive number of tracings could be due to (1) creating @tf.function
repeatedly in a loop, (2) passing tensors with different shapes, (3)
passing Python objects instead of tensors. For (1), please define your
@tf.function outside of the loop. For (2), @tf.function has
experimental_relax_shapes=True option that relaxes argument shapes that can
avoid unnecessary retracing. For (3), please refer to
https://www.tensorflow.org/guide/function#controlling_retracing and
https://www.tensorflow.org/api_docs/python/tf/function for  more details.



```
Forest fire
SM90c5f1e42f00ef91e0d7497f8db60527
Fire detected
SMS Sent!
```
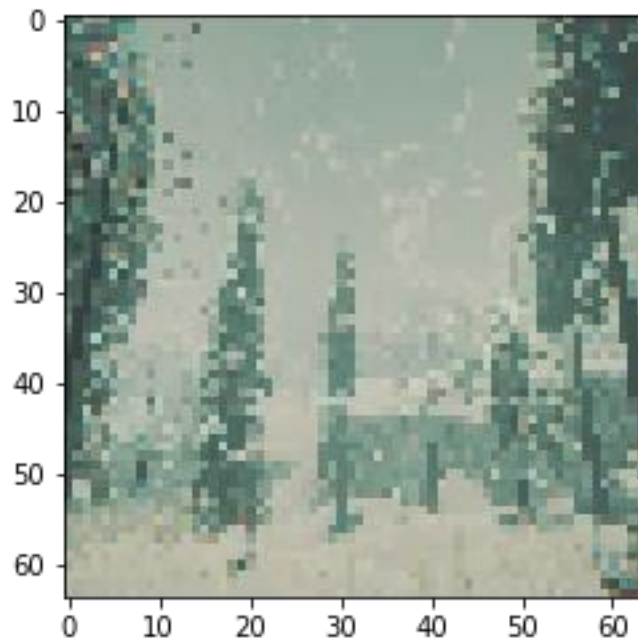
```
img2 =
image.load_img('/home/wsuser/work/Dataset/test_set/forest/1200px_Mountainar
ea.jpg',target_size=(64,64))
Y = image.img_to_array(img2)
x = np.expand_dims(Y,axis=0)
val = model.predict(x)
plt.imshow(img2)
plt.show()
message(val)
```

No Fire

```python
from ibm_watson_machine_learning import APIClient
wml_credentials={"url":"https://us-
south.ml.cloud.ibm.com","apikey":"TFXoHzN3M76f8UM68mdo_MshGtF2Dk1H56fJ67oDa
gbV"}
client=APIClient(wml_credentials)
```

```python
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'])
```

```python
space_uid=guid_from_space_name(client,'imageclassification')
print("Space UID= "+space_uid)
```

Space UID= 1f4924ef-b4eb-471f-a528-7b437fc3efb9

```python
client.set.default_space(space_uid)
```

'SUCCESS'

```python
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                    0e6e79df-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
scikit-learn_0.22-py3.6       154010fa-5b3b-4ac1-82af-4d5ee5abbc85   base
default_r3.6                  1b70aec3-ab34-4b87-8aa0-a4a3c8296a36   base
pytorch-onnx_1.3-py3.6        1bc6029a-cc97-56da-b8e0-39c3880dbbe7   base
kernel-spark3.3-r3.6          1c9e5454-f216-59dd-a20e-474a5cdf5988   base
pytorch-onnx_rt22.1-py3.9-edt 1d362186-7ad5-5b59-8b6c-9d0880bde37f   base
tensorflow_2.1-py3.6          1eb25b84-d6ed-5dde-b6a5-3fbdf1665666   base
spark-mllib_3.2               20047f72-0a98-58c7-9ff5-a77b012eb8f5   base
tensorflow_2.4-py3.8-horovod  217c16f6-178f-56bf-824a-b19f20564c49   base
runtime-22.1-py3.9-cuda       26215f05-08c3-5a41-a1b0-da66306ce658   base
do_py3.8                      295addb5-9ef9-547e-9bf4-92ae3563e720   base
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 [126]:
software_spec_uid=client.software_specifications.get_uid_by_name("tensorflo
w_1.15-py3.6")
software_spec_uid
```
```
                                                                    Out[126]:
'2b73a275-7cbf-420b-a912-eae7f436e0bc'
```
```
                                                                    In [128]:
keras
```