

Importing Keras libraries

```
In [1]: import keras
```

Importing ImageDataGenerator from Keras

```
In [2]: from matplotlib import pyplot as plt
from keras.preprocessing.image import ImageDataGenerator
```

```
In [4]: pip install ibm_watson_machine_learning
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Collecting ibm_watson_machine_learning
```

```
  Downloading ibm_watson_machine_learning-1.0.257-py3-none-any.whl (1.8 MB)
```

```
100% |#####| 1.8 MB 29.1 MB/s
```

```
Requirement already satisfied: certifi in /usr/local/lib/python3.7/dist-packages (from ibm_watson_machine_learning) (2022.9.24)
```

```
Collecting ibm-cos-sdk==2.7.*
```

```
  Downloading ibm-cos-sdk-2.7.0.tar.gz (51 kB)
```

```
100% |#####| 51 kB 866 kB/s
```

```
Requirement already satisfied: importlib-metadata in /usr/local/lib/python3.7/dist-packages (from ibm_watson_machine_learning) (4.13.0)
```

```
Collecting lomond
```

```
  Downloading lomond-0.3.3-py2.py3-none-any.whl (35 kB)
```

```
Requirement already satisfied: urllib3 in /usr/local/lib/python3.7/dist-packages (from lomond) (1.26.12)
```

```
Requirement already satisfied: im
portlib-metadata in /usr/local/li
b/python3.7/dist-packages (from i
bm_watson_machine_learning) (4.1
3.0)
Collecting lomond
  Downloading lomond-0.3.3-py2.py
3-none-any.whl (35 kB)
Requirement already satisfied: ur
llib3 in /usr/local/lib/python3.
7/dist-packages (from ibm_watson_
machine_learning) (1.24.3)
Requirement already satisfied: pa
ndas<1.5.0,>=0.24.2 in /usr/loca
l/lib/python3.7/dist-packages (fr
om ibm_watson_machine_learning)
(1.3.5)
Requirement already satisfied: re
quests in /usr/local/lib/python3.
7/dist-packages (from ibm_watson_
machine_learning) (2.23.0)
Requirement already satisfied: ta
bulate in /usr/local/lib/python3.
7/dist-packages (from ibm_watson_
machine_learning) (0.8.10)
Requirement already satisfied: pa
ckaging in /usr/local/lib/python
3.7/dist-packages (from ibm_watso
n_machine_learning) (21.3)
Collecting ibm-cos-sdk-core==2.7.
0
  Downloading ibm-cos-sdk-core-2.
7.0.tar.gz (824 kB)
|██████████████████████████████| 824 kB 65.6 MB/s
Collecting ibm-cos-sdk-s3transfer
==2.7.0
  Downloading ibm-cos-sdk-s3transf
er-2.7.0.tar.gz (133 kB)
|██████████████████████████████| 133 kB 68.8 MB/s
Collecting jmespath<1.0.0,>=0.7.1
  Downloading jmespath-0.10.0-py
2.py3-none-any.whl (24 kB)
Collecting docutils<0.16,>=0.10
  Downloading docutils-0.15.2-py3
-none-any.whl (547 kB)
|██████████████████████████████| 547 kB 65.2 MB/s
Requirement already satisfied: py
thon-dateutil<3.0.0,>=2.1 in /us
r/local/lib/python3.7/dist-packag
es (from ibm-cos-sdk-core==2.7.0-
```

```
>ibm-cos-sdk==2.7.*->ibm_watson_m
achine_learning) (2.8.2)
Requirement already satisfied: nu
mpy>=1.17.3 in /usr/local/lib/pyt
hon3.7/dist-packages (from pandas
<1.5.0,>=0.24.2->ibm_watson_machi
ne_learning) (1.21.6)
Requirement already satisfied: py
tz>=2017.3 in /usr/local/lib/pyth
on3.7/dist-packages (from pandas<
1.5.0,>=0.24.2->ibm_watson_machin
e_learning) (2022.6)
Requirement already satisfied: si
x>=1.5 in /usr/local/lib/python3.
7/dist-packages (from python-date
util<3.0.0,>=2.1->ibm-cos-sdk-cor
e==2.7.0->ibm-cos-sdk==2.7.*->ibm
_watson_machine_learning) (1.15.
0)
Requirement already satisfied: id
na<3,>=2.5 in /usr/local/lib/pyth
on3.7/dist-packages (from request
s->ibm_watson_machine_learning)
(2.10)
Requirement already satisfied: ch
ardet<4,>=3.0.2 in /usr/local/li
b/python3.7/dist-packages (from r
equests->ibm_watson_machine_learn
ing) (3.0.4)
Requirement already satisfied: zi
pp>=0.5 in /usr/local/lib/python
3.7/dist-packages (from importlib
-metadata->ibm_watson_machine_lea
rning) (3.10.0)
Requirement already satisfied: ty
ping-extensions>=3.6.4 in /usr/lo
cal/lib/python3.7/dist-packages
(from importlib-metadata->ibm_wat
son_machine_learning) (4.1.1)
Requirement already satisfied: py
parsing!=3.0.5,>=2.0.2 in /usr/lo
cal/lib/python3.7/dist-packages
(from packaging->ibm_watson_machi
ne_learning) (3.0.9)
Building wheels for collected pac
kages: ibm-cos-sdk, ibm-cos-sdk-c
ore, ibm-cos-sdk-s3transfer
  Building wheel for ibm-cos-sdk
(setup.py) ... done
  Created wheel for ibm-cos-sdk:
filename=ibm_cos_sdk-2.7.0-py2.py
3-none-any.whl size=72563 sha256=
5e1b00b96524160d8ef5421121f9a0b05
```

34c97164c844c2b4a5715fae47ae400

Stored in directory: /root/.cache/pip/wheels/47/22/bf/e1154ff0f5de93cc477acd0ca69abfbb8b799c5b28a66b44c2

Building wheel for ibm-cos-sdk-core (setup.py) ... done

Created wheel for ibm-cos-sdk-core: filename=ibm_cos_sdk_core-2.7.0-py2.py3-none-any.whl size=501013 sha256=7d528d6a6617defa0d8f2e942488b2c37fba6347e8cd10b61d82c14d1bbcdf99

Stored in directory: /root/.cache/pip/wheels/6c/a2/e4/c16d02f809a3ea998e17cfd02c13369281f3d232aaf5902c19

Building wheel for ibm-cos-sdk-s3transfer (setup.py) ... done

Created wheel for ibm-cos-sdk-s3transfer: filename=ibm_cos_sdk_s3transfer-2.7.0-py2.py3-none-any.whl size=88622 sha256=1655c3084b8eb70b74e640f4f06c4797f346fa3e7c09b8ab2127958c8069ea60

Stored in directory: /root/.cache/pip/wheels/5f/b7/14/fbe02bc1ef1af890650c7e51743d1c83890852e598d164b9da

Successfully built ibm-cos-sdk ibm-cos-sdk-core ibm-cos-sdk-s3transfer

Installing collected packages: jmespath, docutils, ibm-cos-sdk-core, ibm-cos-sdk-s3transfer, lmonad, ibm-cos-sdk, ibm-watson-machine-learning

Attempting uninstall: docutils

Found existing installation: docutils 0.17.1

Uninstalling docutils-0.17.1:

Successfully uninstalled docutils-0.17.1

Successfully installed docutils-0.15.2 ibm-cos-sdk-2.7.0 ibm-cos-sdk-core-2.7.0 ibm-cos-sdk-s3transfer-2.7.0 ibm-watson-machine-learning-1.0.257 jmespath-0.10.0 lmonad-0.3.3

```
In [11]: pip install watson-machine-learn
```

Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
ERROR: Could not find a version that satisfies the requirement watson-machine-learnig-client (from versions: none)
ERROR: No matching distribution found for watson-machine-learnig-client

```
In [12]: import ibm_watson_machine_learning
from ibm_watson_machine_learning
wml_credentials = {
    "url": "https://",
    "apikey": "hex"
}
client = APIClient(wml_credentials)
```

Python 3.7 and 3.8 frameworks are deprecated and will be removed in a future release. Use Python 3.9 framework instead.

```
In [13]: def guid_from_space_name(client,
    space = client.spaces.get_details(space_name)
    return next(item for item in space.items)
```

```
In [14]: space_uid = guid_from_space_name(client, 'forest')
print("Space UID = " + space_uid)
```

Space UID = 2bae4b0b-57cd-4fd3-89ef-5fc4a44867a5

```
In [15]: client.set_default_space(space_uid)
```

Out[15]: 'SUCCESS'

```
In [21]: client.repository.download('1baa')
```

Successfully saved model content to file: 'forest.tar.gz'

Out[21]: '/content/forest.tar.gz'

In [16]:

```
client.software_specifications.l
```

```
-----
-----
-  ----
NAME                                     AS
SET_ID
TYPE
default_py3.6                           00
62b8c9-8b7d-44a0-a9b9-46c416adcbd
9  base
kernel-spark3.2-scala2.12               02
0d69ce-7ac1-5e68-ac1a-31189867356
a  base
pytorch-onnx_1.3-py3.7-edt              06
9ea134-3346-5748-b513-49120e15d28
8  base
scikit-learn_0.20-py3.6                 09
c5a1d0-9c1e-4473-a344-eb7b665ff68
7  base
spark-mllib_3.0-scala_2.12              09
f4cff0-90a7-5899-b9ed-1ef348aebde
e  base
pytorch-onnx_rt22.1-py3.9               0b
848dd4-e681-5599-be41-b5f6fccc647
1  base
ai-function_0.1-py3.6                   0c
db0f1e-5376-4f4d-92dd-da3b69aa9bd
a  base
shiny-r3.6                              0e
6e79df-875e-4f24-8ae9-62dcc214830
6  base
tensorflow_2.4-py3.7-horovod            10
92590a-307d-563d-9b62-4eb7d64b3f2
2  base
pytorch_1.1-py3.6                       10
ac12d6-6b30-4ccd-8392-3e922c096a9
2  base
tensorflow_1.15-py3.6-ddl               11
1e41b3-de2d-5422-a4d6-bf776828c4b
7  base
autoai-kb_rt22.2-py3.10                 12
5b6d9a-5b1f-5e8d-972a-b251688ccf4
0  base
runtime-22.1-py3.9                      12
b83a17-24d8-5082-900f-0ab31fbfd3c
b  base
scikit-learn_0.22-py3.6                 15
4010fa-5b3b-4ac1-82af-4d5ee5abbc8
5  base
default_r3.6                            1b
```


Open cv for video processing

```
In [ ]: pip install twilio
```

```
In [ ]: pip install playsound
```

```
In [ ]: from logging import WARNING
        #import opencv library
        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
        #import playsound package
        from playsound import playsound
```

Creating An Account in Twilio Service

```
In [ ]: from twilio.rest import Client
        from playsound import playsound
        if pred==1:
            print('Forest fire')
            account_sid='AC34c4bee5e03df7b0696c87bd6d712'
            auth_token='1fc522239435d0c2510b1c1e1e1e1e1e'
            client=Client(account_sid,auth_token)
            message=client.messages \
                .create(
                    body='forest fire is detected',
                    #use twilio free number
                    from_='+19803934024',
                    #to number
                    to='+919962082226')
            print(message.sid)
            print("Fire detected")
            print("SMS Sent!")
```