

# PROJECT DEVELOPMENT PHASE

## SPRINT 4

<b>TEAM ID</b>	<b>PNT2022TMID14113</b>
<b>TITLE</b>	<b>IOT BASED SMART CROP PROTECTION FOR AGRICULTURE</b>

## **USING PYTHON CODE TO DISPLAY THE RESULT IN NODE RED DASHBOARD**

### **CODE**

```
import cv2
import numpy as np
import wiotp.sdk.device
import playsound
import random
import time
import datetime
import ibm_boto3
from ibm_botocore.client import config, ClientError
#CloudantDB
from cloudant.client import Cloudant
from cloudant.error import cloudantException
from cloudant.result import Result, ResultByKey
from clarifai_grpc.channel.clarifai_channel import ClarifaiChannel
from clarifai_grpc.grpc.api import service_pb2_grpc
stub=service_pb2_grpc.V2Stub (ClarifaiChannel.get_grpc_channel())
from clarifai_grpc.grpc.api import service_pb2, resources_pb2
from clarifai_grpc.grpc.api.status import status_code_pb2
This is how you authenticate.
metadata(('authorization',"Keybc85e516574f43f42f6f6a2e9eb87'),)
COS_ENDPOINT = "https://s3.jp-tok.cloud-object-storage.appdomain.cloud"
COS_API_KEY_ID = "rep-ct18m07990117XFAE7170cmFLLOQA25"
```

COS AUTH ENDPOINT = <https://iam.cloud.ibm.com/identity/token>

COS RESOURCE\_CRN "ern:vi:bluemia:public:cloud-object-storage:global:/b64a3da97440b00c23ef23d6:199ab165-0d9d-420-842-98d86804368::"

clientdb Cloudant ("apikey-v2-163cpaghhfdi kvpasohverju5v5y3ubs",  
"bab1191453255bb78e7e2f0e1", url="https://apikey-v2-16aterpkohhaefikvpsschwerp5fvgube:bab115 clientdb.connect()

#Create resource

```
Cos= ibm_boto3.resource("s3",  
    ibm_api_key_id=COS_API_KEY_ID, ibm_service_instance_id=COS_RESOURCE_CRN,  
    ibm_auth_endpoint=COS AUTH ENDPOINT, config=config (signature_version="oauth"),  
    endpoint_url=COS_ENDPOINT  
)
```

def multi\_part\_upload(bucket\_name, item\_name, file\_path): try:

print ("Starting file transfer for (0) to bucket: (1)\n".format(item\_name, bucket\_name))

#set 5 MB chunks

Part\_size=1024\*1024\*5

#set threshold to 15 MB

File\_threshold=1024\*1024\*15

#set the transfer threshold and chunk size

Transfer\_config ibm\_boto3.s3.transfer.TransferConfig

(

Multipart\_threshold=File\_threshold,

Multipart\_chunksize=Part\_size

)

#the upload\_fileobj method will automatically execute a multi-part upload

#in 5 MB chunks for all files over 15 MB

with open(file\_path, "rb") as file\_data:

cos.Object (bucket\_name, item\_name).upload\_fileobj

(

Fileobj=file\_data,

Config=transfer\_config

)

print("Transfer for (0) Complete!\n".format(item\_name))

except clienterror as be:

```

print("CLIENT ERROR:(0)\n".format(be))

except Exception as be:
    print("unable to complete multi-part upload:(0)".format(0))

def myCommandCallback(cmd):
    print("Command received: " + cmd.data + " command " + cmd.data('command'))
    print (command)
    if(command=='Lighton'):
        print (lighton)
    elif(command=='lightoff'):
        print (lightoff)
    elif(command=='motoron'):
        print('motoren')
    elif(command=='motoroff'):
        print('motoroff')

    myConfig={ "identity":{
        "orgid:"hj5fmy",
        "typeid": "NodeMCU",
        "deviceId": "12345"
    },
    "auth": {
        "token": "12345678"
    }
}

client =wiotp.sdk.device.DeviceClient (config=myConfig, logHandler=None)

client.connect()

database name="sample"

my_database=clientdb.create_database (database_name)

if my_database.exists():
    Print(f" '{database_name}' successfully created.")

Cap=cv2.VideoCapture('garden.mp4')

If(cap.isOpened()==True):
    Print('file opened') Else:
    Print('file not opened')

While(cap.isOpened());

```

```

Ret,frame = cap.read()

Gray=cv2.cvtColor(frame,cv2.colour_BGR2GRAY)

lms=cv2.resize(frame,(960,540))

Cv2.imwrite('ex.jpg',lms) with
open('ex.jpg',"rb") as f:
File_bytes= f.read()

Request = service_pb2.postmodeloutputrequest
(
Model_id='aaa03c23b3724a56b629203edc62c',
Inputs={resources_pb2.input(data=resources_pb2.data(image=resources_pb2.image(base64=file_bytes)) )})
Response=stub.postmodeloutput(request,metadata=metadata)

If response.status_code !=status_code_pb2.success;
Raise Exception("request failed, status code:"+str(response.status_code))

Detect=false

For concept in response.outputs[0].data.concepts:
#print('%12s:%,2f'%(concept.name,concept.value)) If(concept.value>0.98):
If(concept.name=="animal"):
Print("Alert!Alert!animal detected")
Playsound.playsound('alert.mp3')

Picname+datetime.datetime.now().strftime("%y-%m-%d-%H-%M")

Cv2.imwrite(picname+'.jpg',frame)

Multi_part_upload('gnaneshwar',picname+'.jpg',picname+'.jpg')

Json_document={"link";cos_ENDPOINT+'/'+"gnaneshwar'+'/'+picname+'.jpg"}

New_document=my_database.create_document(json_document) If
New_document.exists():
Print(f"document successfully created.")

Time.sleep(5)

Detect=true

Moist=random.randint(0,100)

Humidity=random.randint(0,100)

Mydata={'animal':detect,'moisture':moist,'humidity':humidity}

Print(mydata)

If(humidity!=none):

```

```
Client.publish(eventid="status",msgformat="json",data=mydata,qos=0,onpublish=None)
```

```
Print("publish ok..")
```

```
Client.commandcallback = mycommandcallback
```

```
Cv2.imshow('frame',ims)
```

```
If cv2.waitKey(1) & 0xFF == ord('q'):
```

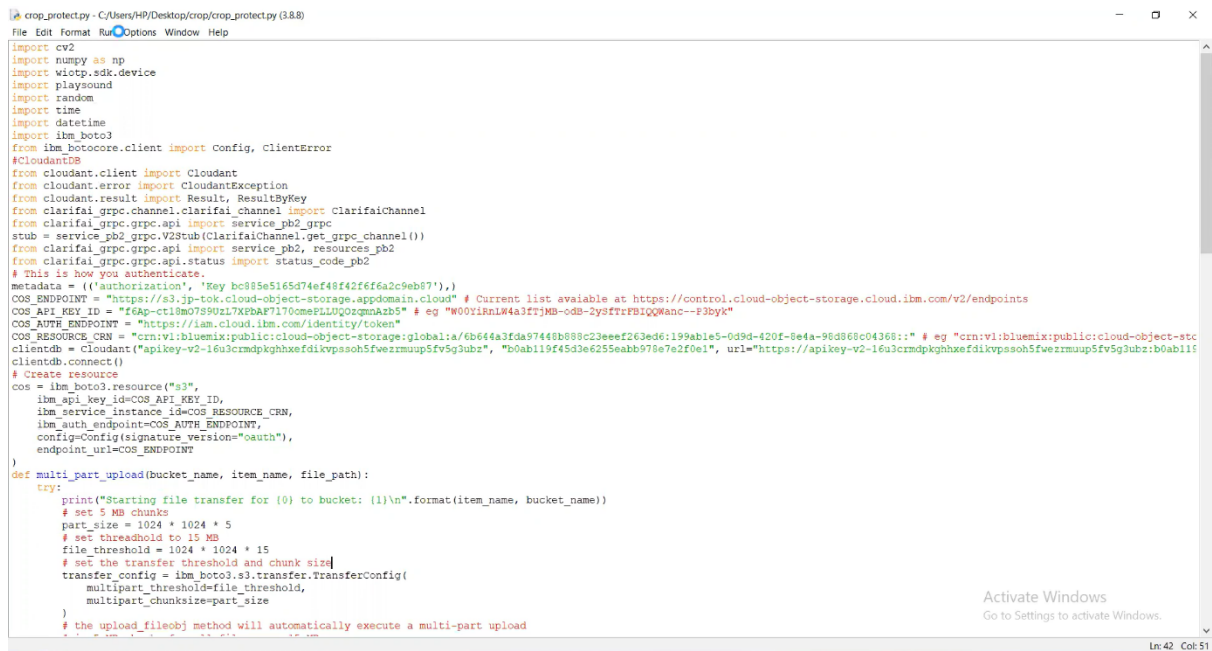
```
Break
```

```
Client.disconnect()
```

```
Cap.release()
```

```
Cv2.destroyAllWindows()
```

## RESULT



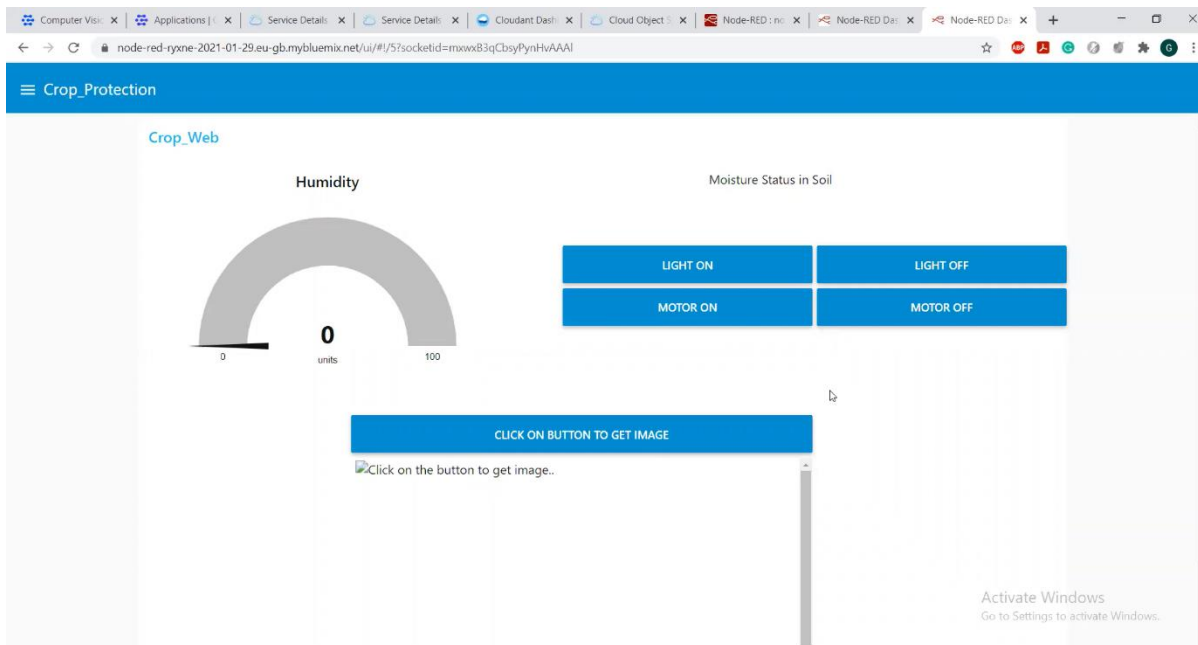
```
crop_protect.py - C:\Users\HP\Desktop\crop\crop_protect.py (3.8.8)
File Edit Format Run Options Window Help

import cv2
import numpy as np
import wiote.sdk.device
import playsound
import random
import time
import datetime
import ibm_boto3
from ibm_botocore.client import Config, ClientError
#CloudantDB
from cloudant.client import Cloudant
from cloudant.error import CloudantException
from cloudant.result import Result, ResultByKey
from clarifai_grpc.channel.clarifai_channel import ClarifaiChannel
from clarifai_grpc.grpc.api import service_pb2_grpc
stub = service_pb2_grpc.V2Stub(ClarifaiChannel.get_grpc_channel())
from clarifai_grpc.grpc.api import service_pb2, resources_pb2
from clarifai_grpc.grpc.api.status import status_code_pb2

# This is how you authenticate.
metadata = (('authorization', 'Key bc985e516d74ef48f42f66a2c9eb67'),)
COS_ENDPOINT = "https://s3.jp-tok.cloud-object-storage.appdomain.cloud" # Current list available at https://control.cloud-object-storage.cloud.ibm.com/v2/endpoints
COS_API_KEY_ID = "f6Ap-ct18m07S9UzL7XpDAF7170mePLLUQozgmnAzb5" # eg "W00YiRnLW4a3fTjMB-odB-2ysftrFBiQQWanc--P3byk"
COS_AUTH_ENDPOINT = "https://iam.cloud.ibm.com/identity/token"
COS_RESOURCE_CRN = "crn:vl:bluemix:public:cloud-object-storage:global:a/6b644a3fda9744b889c23eeef263ed6:199able5-0d9d-420f-8e4a-96d868c04368::" # eg "crn:vl:bluemix:public:cloud-object-stc
clientdb = Cloudant(("apikey-v2-16a3crmdpkghxeffdikvpsaoh5fwezrmup5fv5g3ubz", "b0ab119f45d3e625eabb97be7e2f0e1", url="https://apikey-v2-16a3crmdpkghxeffdikvpsaoh5fwezrmup5fv5g3ubz:b0ab11f
clientdb.connect()
# Create resource
cos = ibm_boto3.resource("s3",
    ibm_api_key_id=COS_API_KEY_ID,
    ibm_service_instance_id=COS_RESOURCE_CRN,
    ibm_auth_endpoint=COS_AUTH_ENDPOINT,
    config=Config(signature_version="oauth"),
    endpoint_url=COS_ENDPOINT
)

def multi_part_upload(bucket_name, item_name, file_path):
    try:
        print("Starting file transfer for {} to bucket: {}".format(item_name, bucket_name))
        # set 5 MB chunks
        part_size = 1024 * 1024 * 5
        # set threshold to 15 MB
        file_threshold = 1024 * 1024 * 15
        # set the transfer threshold and chunk size
        transfer_config = ibm_boto3.s3.transfer.TransferConfig(
            multipart_threshold=file_threshold,
            multipart_chunksize=part_size
        )
        # the upload_fileobj method will automatically execute a multi-part upload
    except Exception as e:
        print(e)

# ... (rest of the code) ...
Ln: 42 Col: 51
```



## RUN THE PYTHON CODE

```

crop_protect.py - C:/Users/HB/Desktop/crop/crop_protect.py (3.8.8)
File Edit Format Run Options Window Help

def myCommandCallback(cmd):
    print("Transfer for {} Complete!\n".format(cmd))
except ClientError as e:
    print("CLIENT ERROR: {}".format(e))
except Exception as e:
    print("Unable to complete multi-part upload")

def myCommandCallback(cmd):
    print("Command received: {}".format(cmd))
    command=cmd.data['command']
    print(command)
    if(command=='lighton'):
        print('lighton')
    elif(command=='lightoff'):
        print('lightoff')
    elif(command=='motoron'):
        print('motoron')
    elif(command=='motoroff'):
        print('motoroff')

myconfig = {
    "identity": {
        "orgId": "h35fmy",
        "typeId": "NodeMCU",
        "deviceId": "12345"
    },
    "auth": {
        "token": "12345678"
    }
}

client = wiotp.sdk.device.DeviceClient(config=myconfig)
client.connect()

database_name = "sample"
my_database = clientdb.create_database(database_name)
if my_database.exists():
    print("{} (database_name) successfully created.".format(database_name))
cap=cv2.VideoCapture("garden.mp4")
if (cap.isOpened()==True):
    print('File opened')
else:
    print('File not found')

while(cap.isOpened()):
    ret, frame = cap.read()
    gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)

```

```

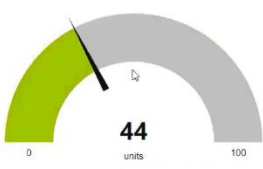
Python 3.8.8 (tags/v3.8.8:0248805, Feb 19 2021, 13:18:16) [MSC v.1928 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/HB/Desktop/crop/crop_protect.py =====
2021-04-06 12:52:19.640 wiotp.sdk.device.client.DeviceClient INFO Connect
d successfully: d:h35fmy:NodeMCU:12345
'sample' successfully created.
File opened
{'Animal': False, 'moisture': 17, 'humidity': 41}
Publish OK..
{'Animal': False, 'moisture': 84, 'humidity': 16}
Publish OK..
{'Animal': False, 'moisture': 46, 'humidity': 43}
Publish OK..
{'Animal': False, 'moisture': 0, 'humidity': 3}
Publish OK..
{'Animal': False, 'moisture': 73, 'humidity': 68}
Publish OK..
{'Animal': False, 'moisture': 26, 'humidity': 26}
Publish OK..

```

Crop\_Protection

Crop\_Web

Humidity



44  
units

Moisture Status in Soil

Water is available


LIGHT ON

LIGHT OFF

MOTOR ON

MOTOR OFF

CLICK ON BUTTON TO GET IMAGE



Click on the button to get image..

Activate Windows  
Go to Settings to activate Windows.