IoT Based Smart Crop Protection System For Agriculture

Python Script

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import cv2

import numpy as np

import wiot.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, resource\_pb2

from clarifai\_grpc.grpc.api.status import status\_code\_pb2

#This is how you authenticate

metadata = (('authorization', 'key 00a3821c08445ca1b9c031ff931243e8'),)

COS\_ENDPOINT = "https://control.cloud-object-storage.cloud.ibm.com/v2/endpoints"

COS\_API\_KEY\_ID = "Zoqf\_NFV\_WLd0AvrD\_JXe7bAImD8gQzN62M5y5R6IYhC"

COS\_AUTH\_ENDPOINT = "https://iam.cloud.ibm.com/identity/token"

COS\_RESOURCE\_CRN = "crn:v1:bluemix:public:cloud-object-storage:global:a/e6f43c1bb26b49ed8a0db19d23284d44:f5a7d673-5fae-4bac-b7bf-6a55fd6b6788::"

clientdb = cloudant("apikey-v2-xnzlgzuusjqspisc90g0l4l38lgb2r0kcyfy0dtgbff", "535888a02ad96bda3decb2c0291820d5", url: "https://apikey-v2-xnzlgzuusjqspisc90g0l4l38lgb2r0kcyfy0dtgbff:535888a02ad96bda3decb2c0291820d5@ec14f8b1-a12a-40f6-b7df-f78d3dbb880f-bluemix.cloudantnosqldb.appdomain.cloud")

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 threadhold 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 size

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 e:

print("Unable to complete multi-part upload: {0}".format(e))

def myCommandCallback(cmd):

print("Command received: %s" % cmd.data)

command=cmd.data['command']

print(command)

elif(command=="motoron"):

print('motoron')

elif(command=="motoroff"):

print('motoroff')

myConfig = {

"identity": {

"orgId": "dswbln",

"typeId": "Crop\_Protector",

"deviceId": "12345678"

},

"auth": {

"token": "1234567890"

}

}

client = wiot.sdk.device.DeviceClient(config=myConfig, logHandlers=None)

client.connect()

database\_name = "cropdb"

my\_database = clientdb.create\_database(database\_name)

if my\_dtabase.exists():

print(f"'(database\_name)' successfully created.")

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 = cv3.cvtColor(frame, cv2.COLOR\_BGR@GRAY)

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

cv2.inwrite('ex.jpg',imS)

with open("ex.jpg", "rb") as f:

file\_bytes = f.read()

#This is the model ID of a publicly available General model. You may use any other public or custom model ID.

request = service\_pb2.PostModeloutputsRequest(

model\_id='82eaf1c767a74869964531e4d9de5237',

inputs=[resources\_pb2.Input(data=resources\_pb2.Data(image=resources\_pb2.Image(base64=file\_bytes))

)])

response = stub.PostModelOutputs(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: %.f' % (concept.name, concept.value))

if(concept.value>0.98):

#print(concept.name)

if(concept.name=="animal"):

print("Alert! Alert! animal detected")

playsound.playsound('alert.mp3')

picname=datetime.datetime.now().strftime("%y-%m-%d-%H-%M")

cv2.inwrite(picname+'.jpg',frame)

multi\_part\_upload('Umamaheswari', picname+'.jpg', picname+'.jpg')

json\_document={"link":COS\_ENDPOINT+'/'+'dear'+'/'+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.publishEvent(eventId="status",msgFormat="json", daya=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()