

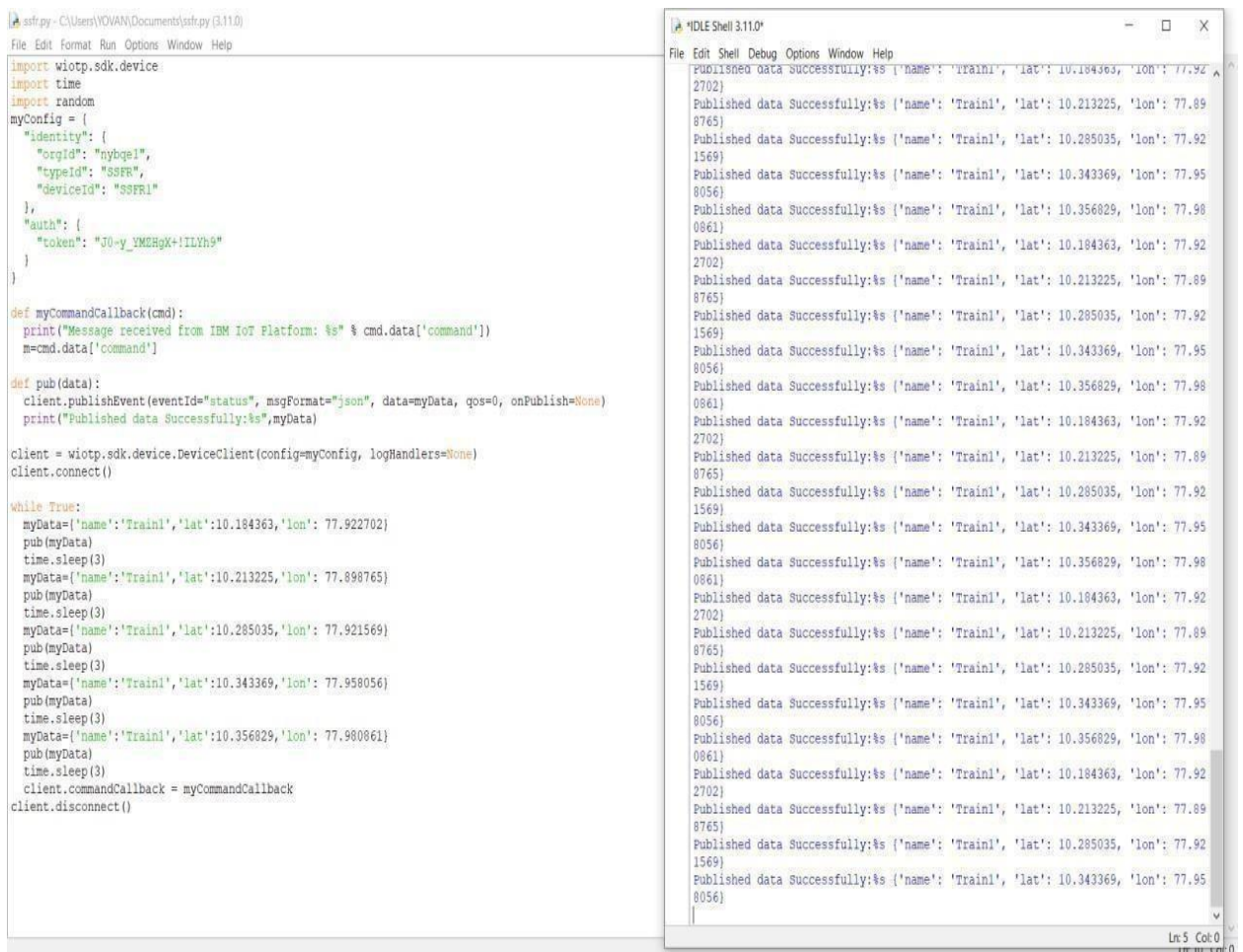
SIGNS WITH SMART CONNECTIVITY FOR ROAD SAFETY

TESTING OF WEB UI

Location Tracking:

- The python code for detecting the location of the train is made to Run.
- The live status of the train is updated in the IBM Watson IoT Platform and it is further used by the node red application.
- The location is shown in the map via the Node red UI.

1)



The image shows a Python script in a text editor and its execution output in a terminal window. The script is located at C:\Users\VOIVAN\Documents\ssfr.py (3.11.0) and uses the `wiot.sdk.device` module to connect to an IBM IoT Platform. It defines a `myConfig` dictionary with identity, auth, and token information. A `myCommandCallback` function prints incoming commands. A `pub` function publishes data as JSON. The main loop sends location data for a train at 3-second intervals.

```
import wiot.sdk.device
import time
import random

myConfig = {
    "identity": {
        "orgId": "nybqe1",
        "typeId": "SSFR",
        "deviceId": "SSFR1"
    },
    "auth": {
        "token": "JU-y_YMEHgX+!ILYh9"
    }
}

def myCommandCallback(cmd):
    print("Message received from IBM IoT Platform: %s" % cmd.data['command'])
    m=cmd.data['command']

def pub(data):
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
    print("Published data Successfully:%s",myData)

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

while True:
    myData={'name':'Train1','lat':10.184363,'lon': 77.922702}
    pub(myData)
    time.sleep(3)
    myData={'name':'Train1','lat':10.213225,'lon': 77.898765}
    pub(myData)
    time.sleep(3)
    myData={'name':'Train1','lat':10.285035,'lon': 77.921569}
    pub(myData)
    time.sleep(3)
    myData={'name':'Train1','lat':10.343369,'lon': 77.958056}
    pub(myData)
    time.sleep(3)
    myData={'name':'Train1','lat':10.356829,'lon': 77.980861}
    pub(myData)
    time.sleep(3)
    client.commandCallback = myCommandCallback
    client.disconnect()
```

The terminal window shows the output of the script, displaying the published data for the train's location at 3-second intervals:

```
PUBLISHED data Successfully:%s {'name': 'Train1', 'lat': 10.184363, 'lon': 77.922702}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.213225, 'lon': 77.898765}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.285035, 'lon': 77.921569}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.343369, 'lon': 77.958056}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.356829, 'lon': 77.980861}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.184363, 'lon': 77.922702}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.213225, 'lon': 77.898765}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.285035, 'lon': 77.921569}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.343369, 'lon': 77.958056}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.356829, 'lon': 77.980861}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.184363, 'lon': 77.922702}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.213225, 'lon': 77.898765}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.285035, 'lon': 77.921569}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.343369, 'lon': 77.958056}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.356829, 'lon': 77.980861}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.184363, 'lon': 77.922702}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.213225, 'lon': 77.898765}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.285035, 'lon': 77.921569}
Published data Successfully:%s {'name': 'Train1', 'lat': 10.343369, 'lon': 77.958056}
```

2)

The screenshot shows the IBM IoT Platform Device Simulator interface. At the top, there are tabs for 'Browse', 'Action', 'Device Types', and 'Interfaces'. A search bar labeled 'Search by Device ID' is present. A 'Device Simulator' status bar shows a toggle switch and a '100%' zoom level. Below this is a table of devices:

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
Jeeva_Yovan	Disconnected	Watson	Device	28 Oct 2022 19:58	
SSFR1	Connected	SSFR	Device	16 Nov 2022 10:32	

The 'SSFR1' device is selected, and its details are shown in a panel below. The panel has tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is active, showing a stream of events:

The recent events listed show the live stream of data that is coming and going from this device:

Event	Value	Format	Last Received
status	{"name":"Train1","lat":10.285035,"lon":77.9215...	json	a few seconds ago
status	{"name":"Train1","lat":10.213225,"lon":77.8987...	json	a few seconds ago
status	{"name":"Train1","lat":10.184363,"lon":77.9227...	json	a few seconds ago
status	{"name":"Train1","lat":10.356829,"lon":77.9808...	json	a few seconds ago
status	{"name":"Train1","lat":10.343369,"lon":77.9580...	json	a few seconds ago

At the bottom right, it says '0 Simulations running'.

3)

The screenshot shows the Node-RED interface. On the left, there is a 'filter nodes' search bar and a list of nodes including 'date picker', 'colour picker', 'form', 'text', 'gauge', 'chart', 'audio out', 'notification', 'ui control', 'template', 'worldmap', and a 'location' category with 'worldmap', 'worldmap in', 'tracks', and 'convex-hull'. The main workspace shows 'Flow 1' with three nodes: 'IBM IoT' (connected), 'debug 1', and 'worldmap' (connected). The 'debug 1' node is connected to the 'IBM IoT' node, and the 'worldmap' node is connected to the 'debug 1' node. On the right, the 'debug' console shows a stream of messages from the 'IBM IoT' node, each containing a JSON payload with 'name', 'lat', and 'lon' values.

```

iot-2/type/SSFR/id/SSFR1/ev/status/fmt/json
msg payload: Object
{
  name: "Train1", lat: 10.184363,
  lon: 77.922702
}
16/11/2022, 11:06:53 am node debug 1
iot-2/type/SSFR/id/SSFR1/ev/status/fmt/json
msg payload: Object
{
  name: "Train1", lat: 10.213225,
  lon: 77.898765
}
16/11/2022, 11:06:55 am node debug 1
iot-2/type/SSFR/id/SSFR1/ev/status/fmt/json
msg payload: Object
{
  name: "Train1", lat: 10.285035,
  lon: 77.921569
}
16/11/2022, 11:06:57 am node debug 1
iot-2/type/SSFR/id/SSFR1/ev/status/fmt/json
msg payload: Object
{
  name: "Train1", lat: 10.343369,
  lon: 77.958056
}
16/11/2022, 11:07:00 am node debug 1
iot-2/type/SSFR/id/SSFR1/ev/status/fmt/json
msg payload: Object
{
  name: "Train1", lat: 10.356829,
  lon: 77.980861
}
16/11/2022, 11:07:03 am node debug 1
iot-2/type/SSFR/id/SSFR1/ev/status/fmt/json
msg payload: Object
{
  name: "Train1", lat: 10.184363,
  lon: 77.922702
}
  
```

4)

Live Status

Tracking

