

# SENDING DATA FROM RASPBERRY-PI TO IBM WATSON

<b>Date</b>	3 NOVEMBER 2022
<b>Team ID</b>	PNT2022TMID15087
<b>Project Name</b>	GAS LEAKAGE MONITORING AND ALERTING SYSTEM FOR INDUSTRIES

## AIM:

To send sensor data (or any dummy data) from Raspberry –Pi to IBM Watson .In our case it is DHT sensors Data.

## REQUIREMENTS:

### HARDWARE:

- RASPBERRY-PI (3B)(WITH ETHERNET CABLE OR WIFI CONNECTED)
- USB MOUSE
- USB KEYBOARD
- VGA TO HDMI CABLE
- A MONITOR
- RASPBERRY'S POWER SUPPLY
- DHT-11 Sensor ○ Connecting Wires

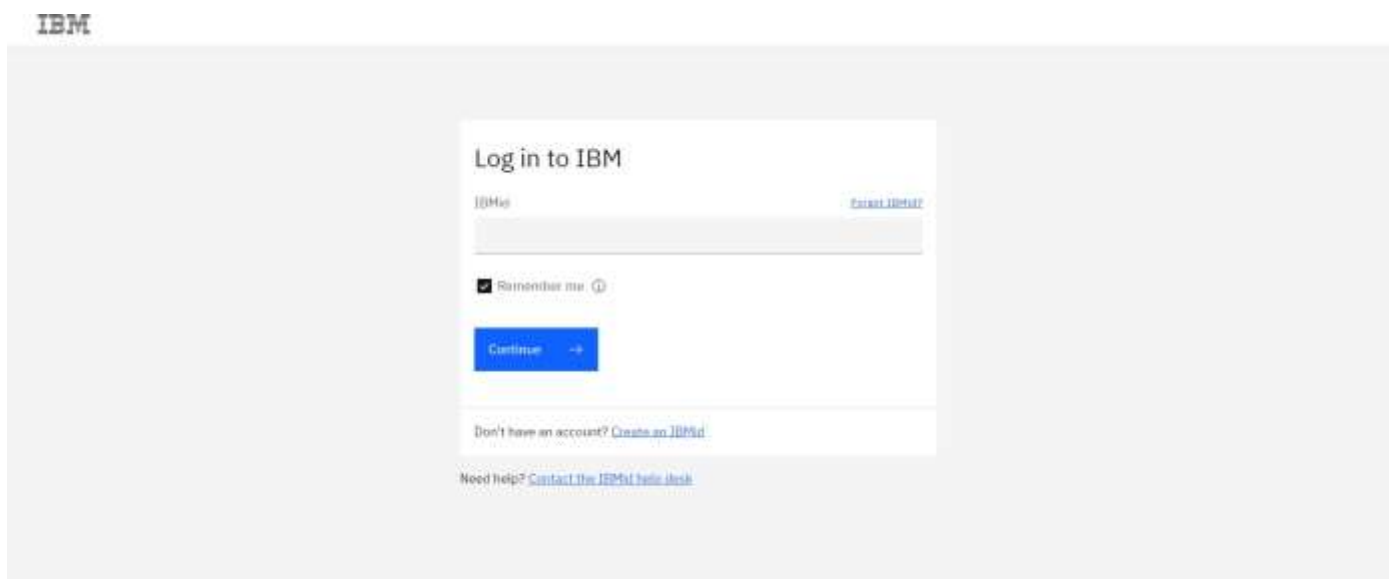
### SOFTWARE:

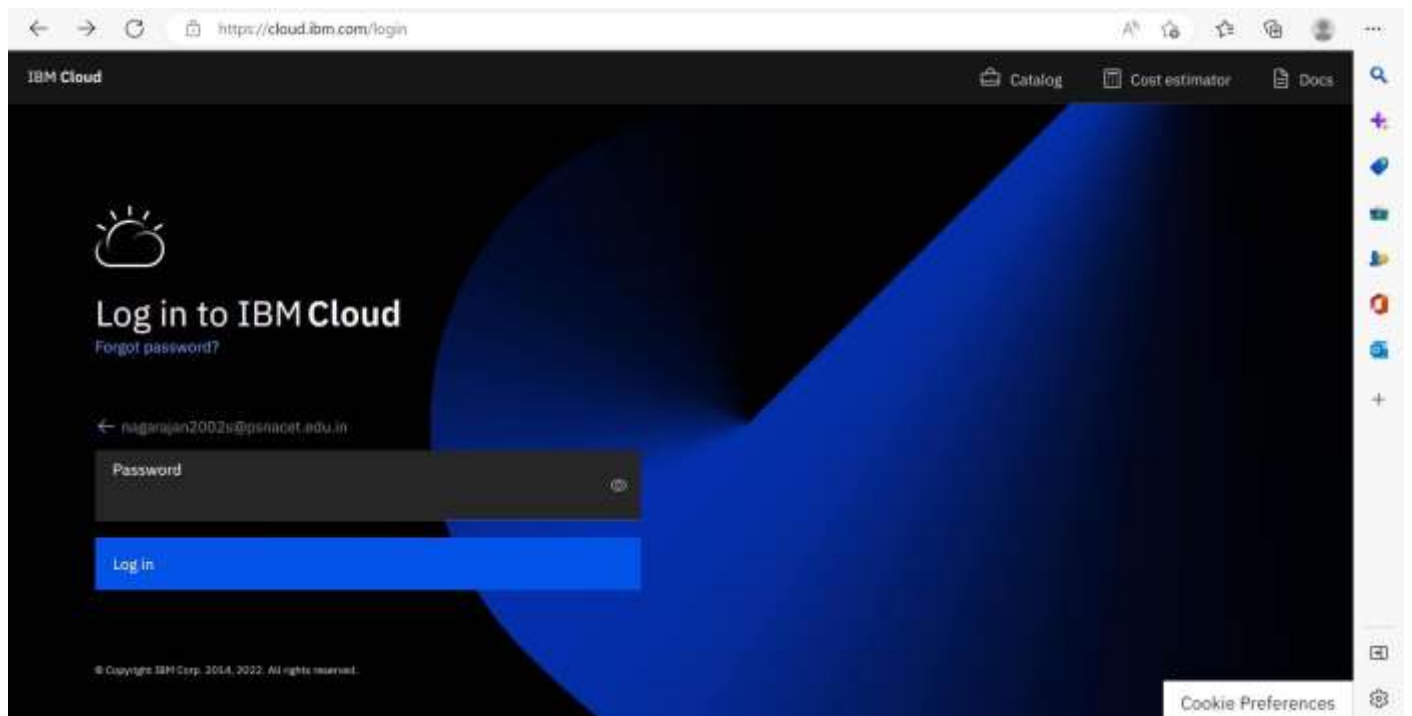
- IBM BLUEMIX ACCOUNT

## STEPS TO BE FOLLOWED

### Step-1: Create a device in IBM Watson:

- Firstly, login into your IBM-Bluemix account with your e-mail ID and Password.





- Click on catalog on your dashboard screen, then under platform go IoT.

IBM Cloud

Search the catalog...

Sell on IBM CloudCatalog settings

Computes (47)

Containers (9)

Networking (30)

Storage (20)

AI / Machine Learning (17)

Analytics (10)

Blockchain (1)

Databases (28)

Developer tools (25)

Logging and monitoring (3)


Migration (8)

Integration (12)

Internet of Things (1)

Security (25)


Mobile (1)



**Analytics Engine**  
By IBM

Submit your Apache Spark applications as needed and customize the Spark runtimes to satisfy the requirements of your application.


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**API Connect**  
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An enterprise-grade platform for creating, securing, managing, sharing, monetizing, and analyzing custom APIs located on-premises and on the cloud.


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**AnonTech Viz/Vault Platform**  
By Anon Technology, Inc.

Manage personal information as-a-service safely, securely, and in compliance with data privacy regulations using Viz/Vault

Use • Free • HIPAA Enabled • IAM-enabled • Third party supported



**App Configuration**  
By IBM

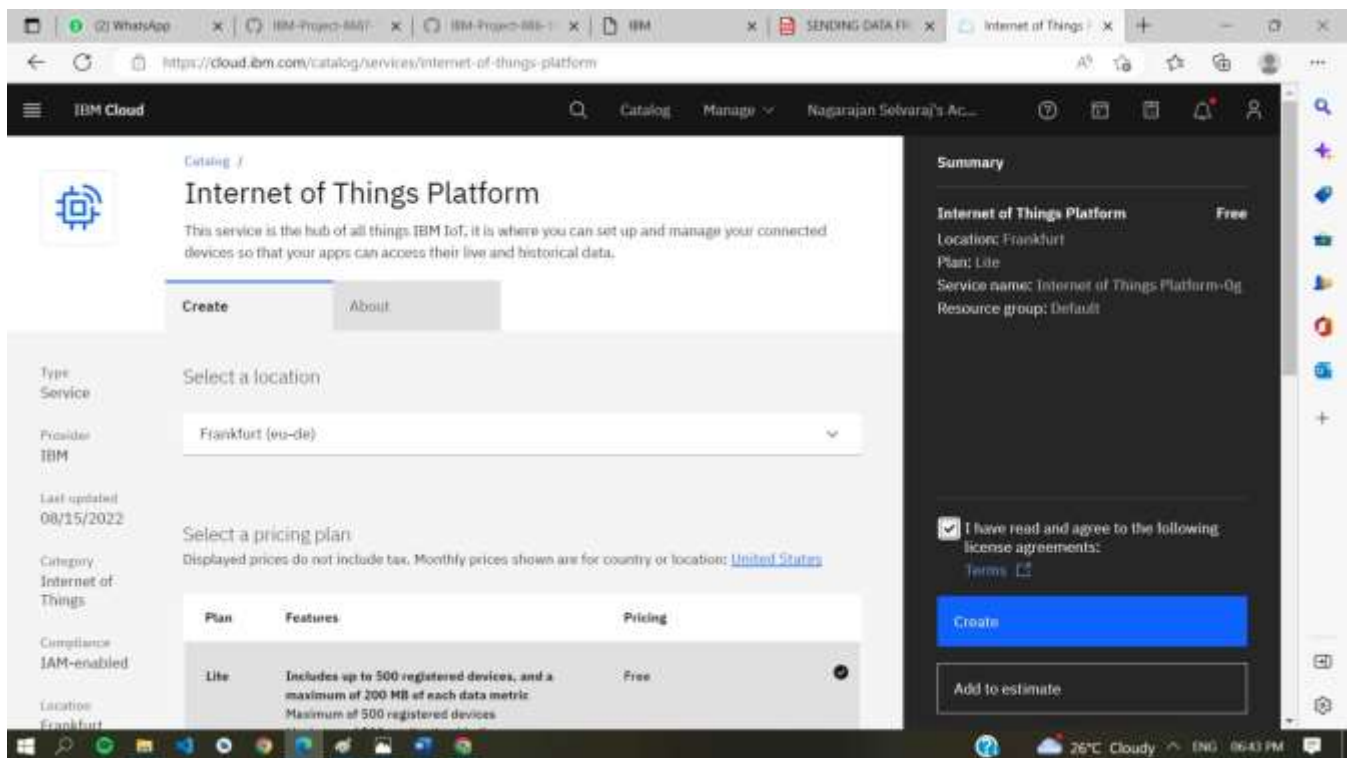
Centralized, in-flight configuration for web and mobile applications and distributed environments.

Use • Free • IAM-enabled • Service Endpoint Supported • IBM supported

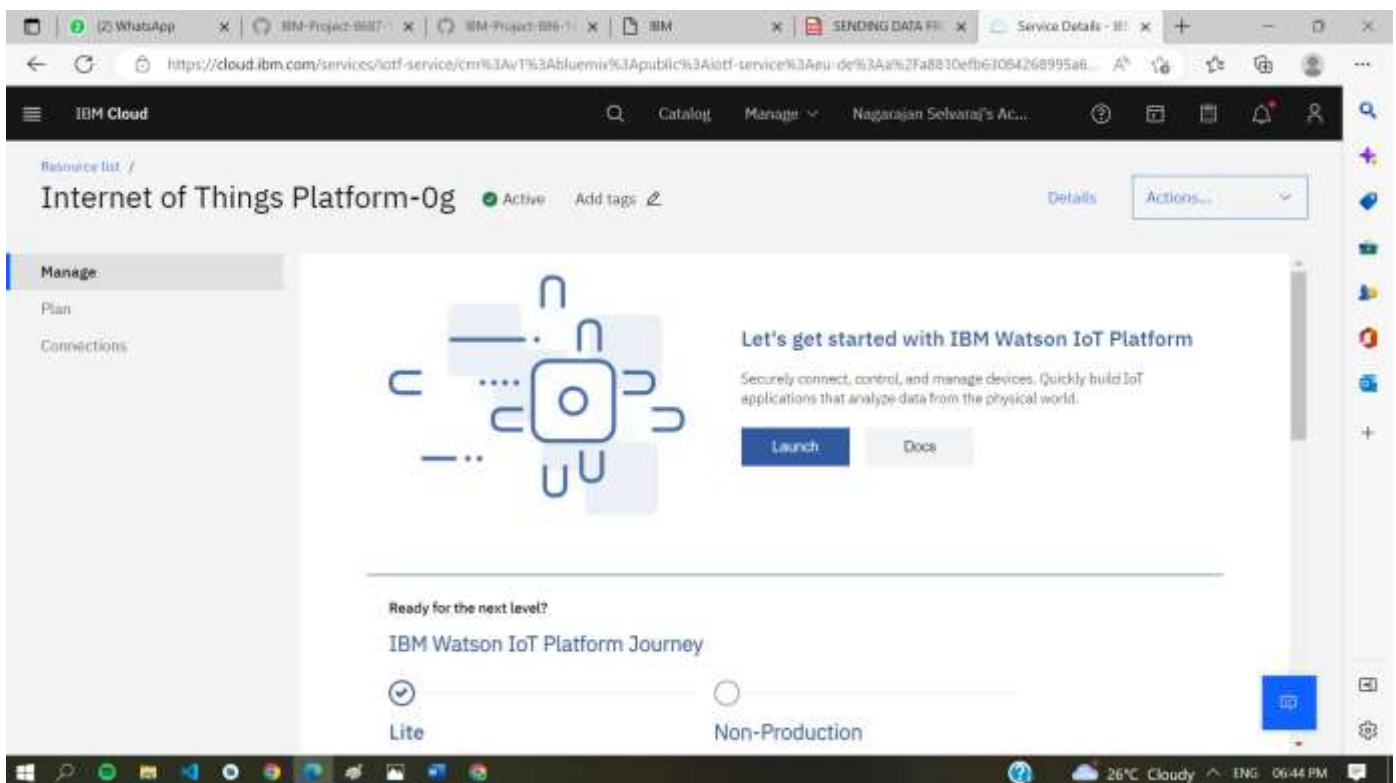
Windows taskbar with icons for WhatsApp, IBM Project, and other applications.

System tray showing temperature (26°C), cloud status, and time (06:42 PM).

Check all details and click on create.

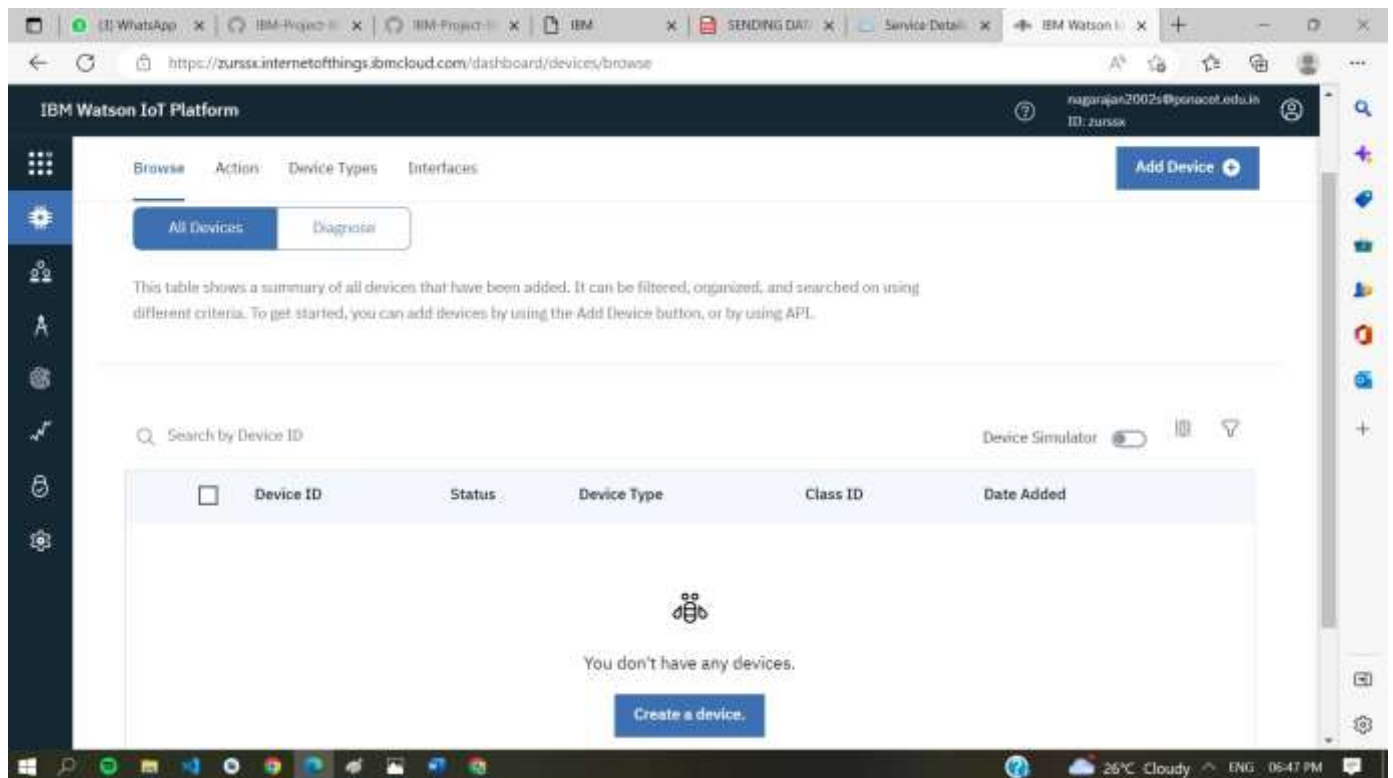


click on Launch

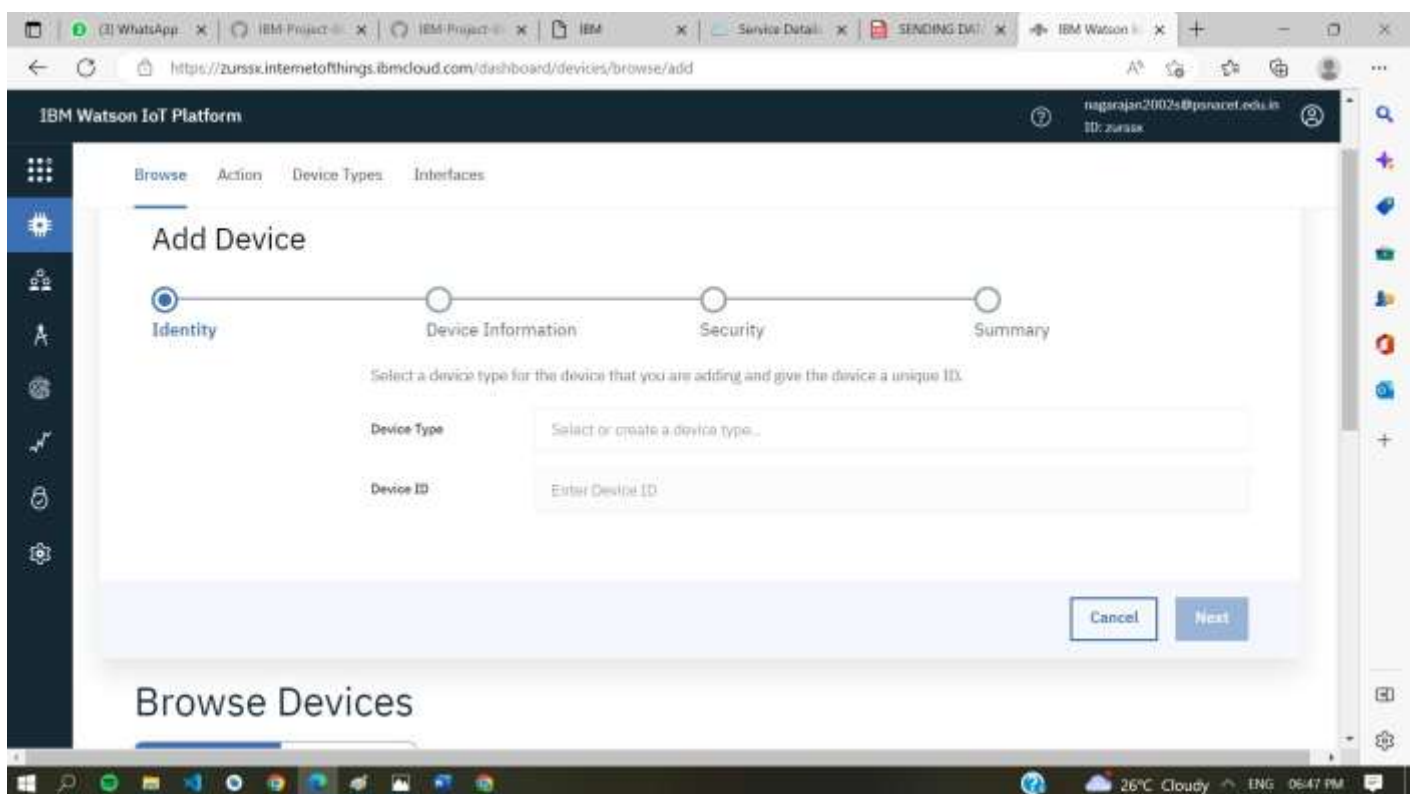


Dashboard of IBM Watson IoT platform,

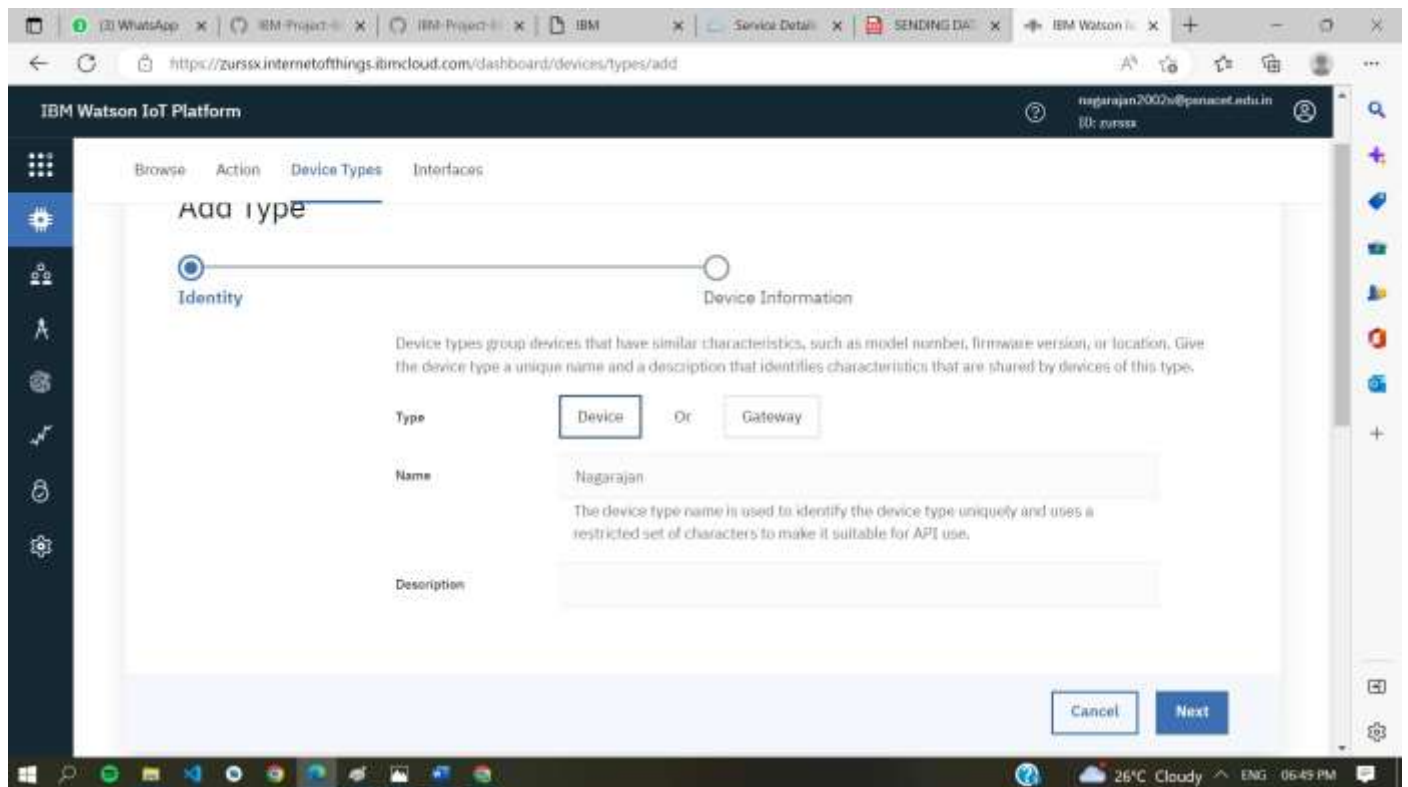
Click on Add device



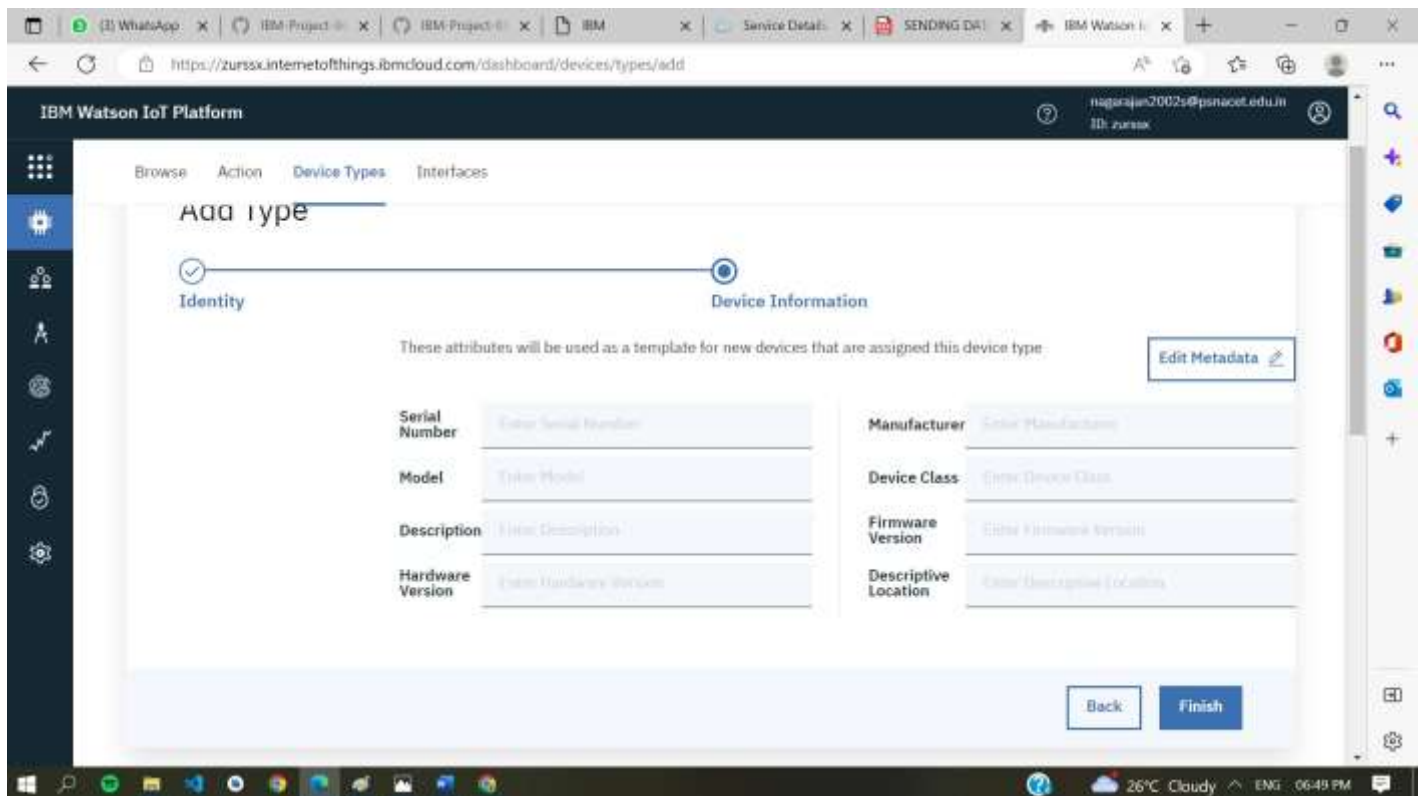
○ After click on Add device this page will open



Go to device type and fill the details.

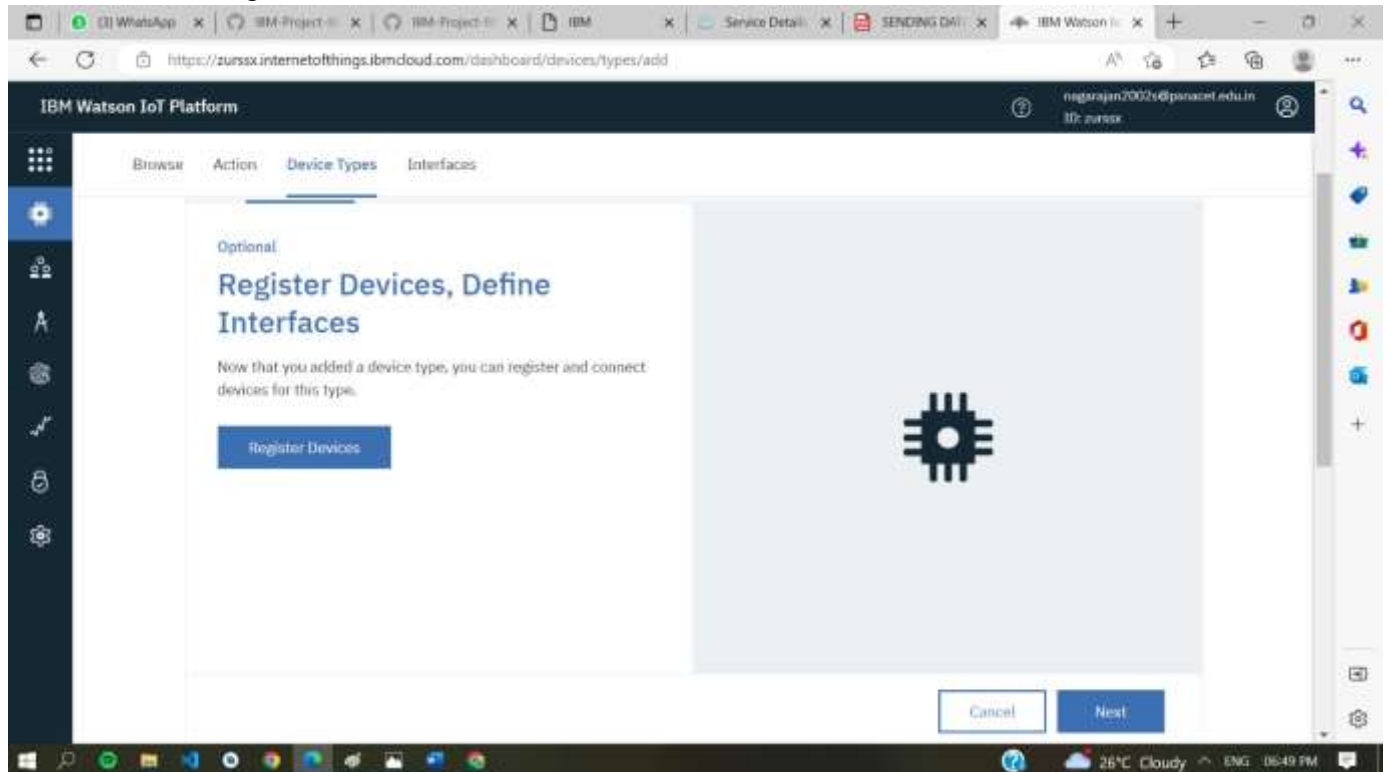


Click on Finish



○ Click on

Register Device.



○ Choose the device and give device ID and then click on next.



○ Click on

The screenshot shows the IBM Watson IoT Platform interface. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. The main heading is 'Add Device'. Below it is a progress bar with four steps: 'Identity' (selected), 'Device Information', 'Security', and 'Summary'. The instruction reads: 'Select a device type for the device that you are adding and give the device a unique ID.' There are two input fields: 'Device Type' with the value 'Nagarajan' and 'Device ID' with the value '12345'. At the bottom right are 'Cancel' and 'Next' buttons.

IBM Watson IoT Platform

Identity Device Information Security Summary

Select a device type for the device that you are adding and give the device a unique ID.

Device Type Nagarajan

Device ID 12345

Cancel Next

Browse Devices

All Devices Diagnose

Next

The screenshot shows the 'Add Device' page at the 'Device Information' step. The progress bar now has 'Identity' as a completed step (indicated by a checkmark) and 'Device Information' as the current step (indicated by a blue circle). The instruction reads: 'You can modify the default device information and enter more information about the device for identification purposes.' There are eight input fields arranged in two columns: 'Serial Number', 'Manufacturer', 'Model', 'Device Class', 'Description', 'Firmware Version', 'Hardware Version', and 'Descriptive Location'. Each field has a placeholder text 'Enter [field name]'. At the bottom left is an 'Add Metadata' button with a plus icon.

IBM Watson IoT Platform

Identity Device Information Security Summary

You can modify the default device information and enter more information about the device for identification purposes.

Serial Number Enter Serial Number

Manufacturer Enter Manufacturer

Model Enter Model

Device Class Enter Device Class

Description Enter Description

Firmware Version Enter Firmware Version

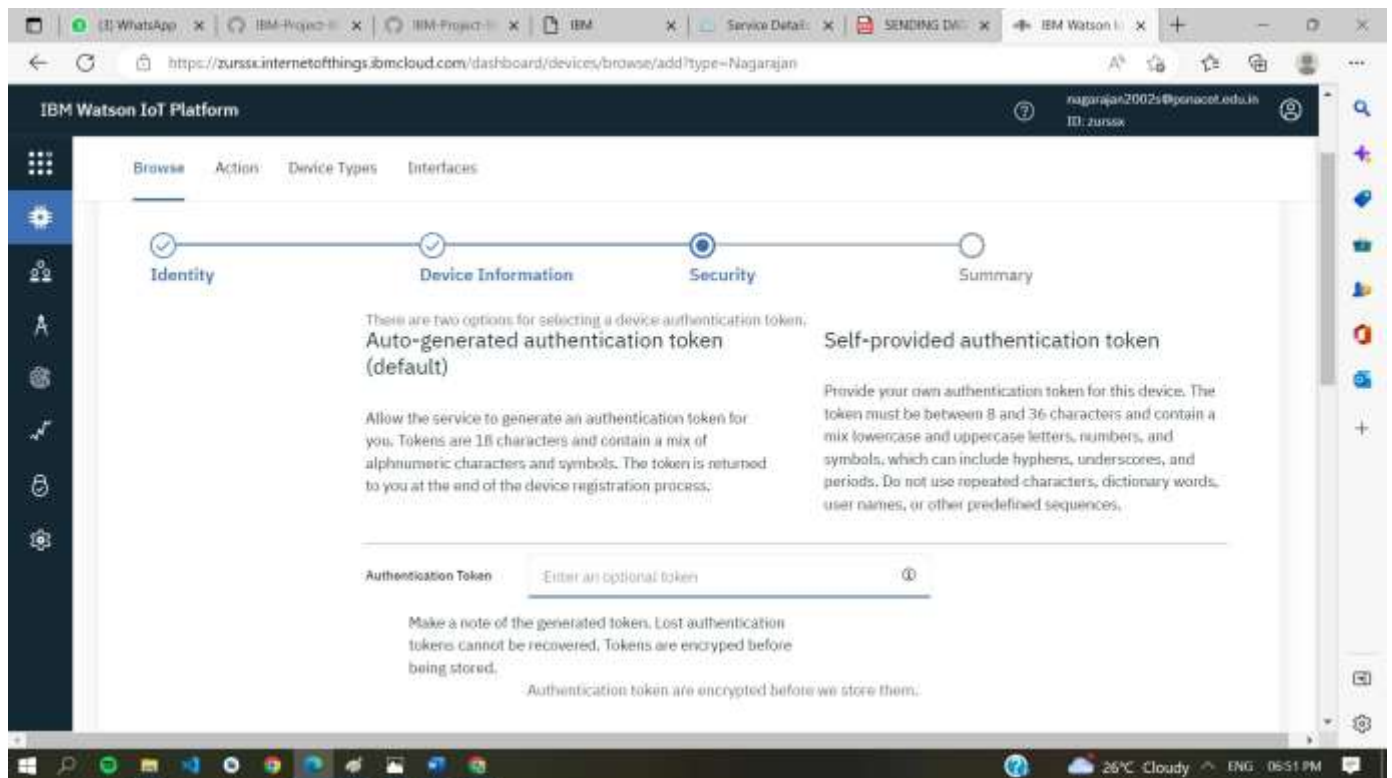
Hardware Version Enter Hardware Version

Descriptive Location Enter Descriptive Location

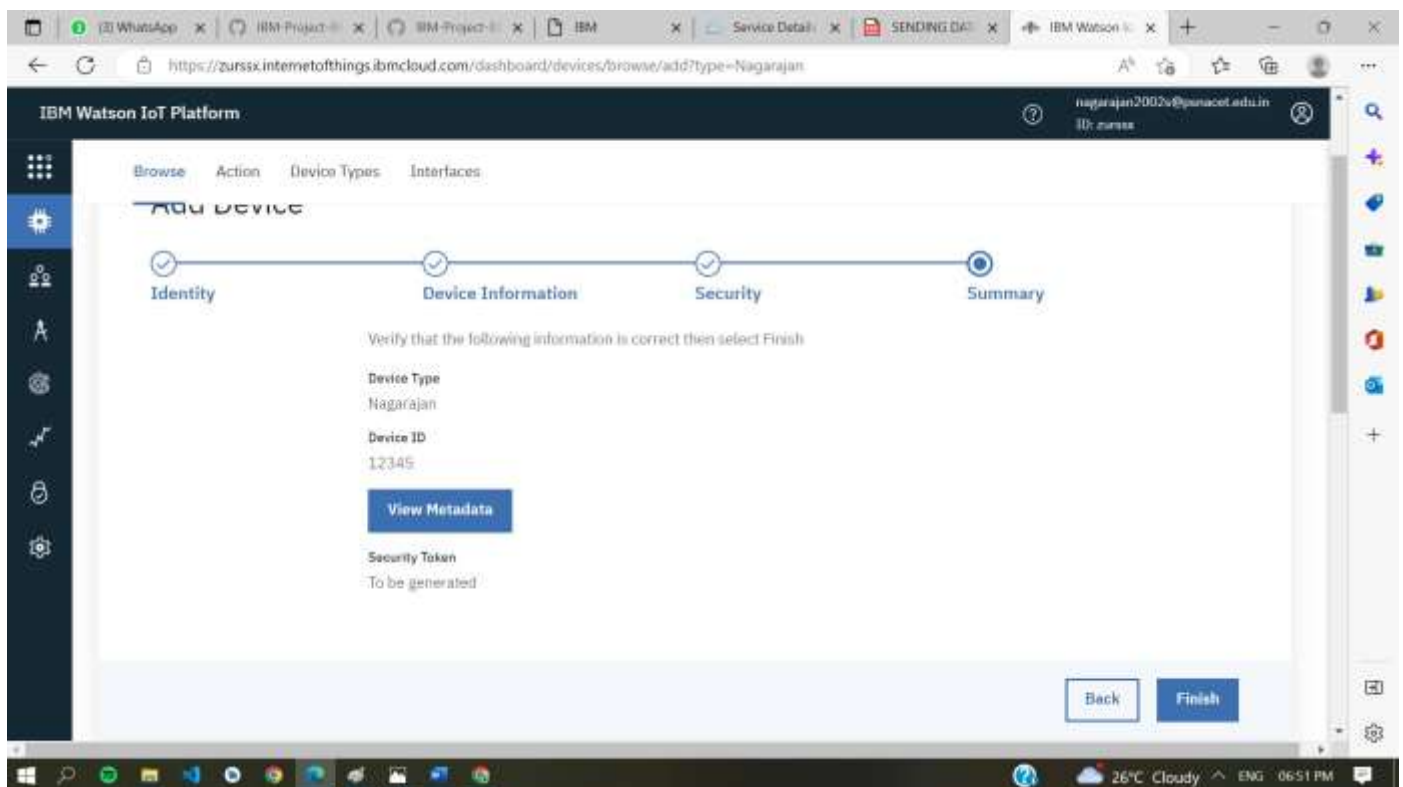
Add Metadata +

○ Click on Next

Click on



Finish



○ Click on

○ Device is created

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Add Device

## Browse Devices

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
12345	Disconnected	Nagarajan	Device	Oct 31, 2022 11:38 AM	

Items per page: 50 | 1-1 of 1 item

1 of 1 page

1 Simulation running

Activate Windows  
Go to Settings to activate Windows.

## STEP-2: INSTALLING NECESSARY PACKAGES ON YOUR PI:

- Now we are going to install necessary packages on your pi.
- Open your terminal in your pi and type the following commands
- `curl -LO https://github.com/ibm-messaging/iot-raspberrypi/releases/download/1.0.2.1/iot_1.0-2_armhf.deb`
- `sudo dpkg -i iot_1.0-2_armhf.deb`
- `service iot status`

Following are the images as to what appears on your pi's terminal when u type these commands

[illegible]

- Then open your terminal and type `pip install ibmiotf`

[illegible]

- I have sent DHT-11 Sensors data to ibm bluemix .To get the code u need to login into IOT GYAN.
- Then I get the image as follows in my pi's shell:

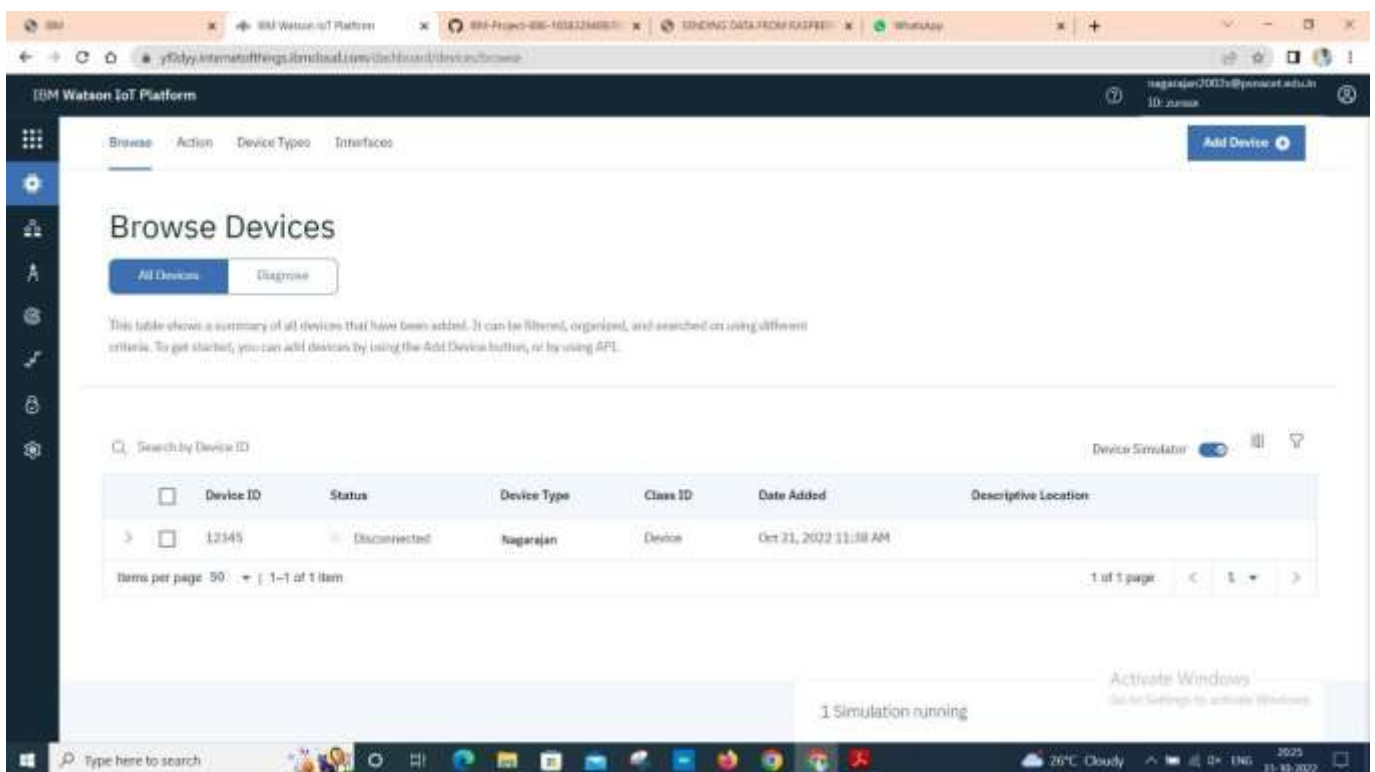
```

The IBM Shell Desktop Window title
Python 2.7.13 (default, Jan 19 2017, 14:48:58)
[GCC 6.3.0 20170124] on linux2
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: /home/pi/Downloads/Python2Shell.py =====
2022-10-23 11:37:57.788 [INFO]: device id: 12345 Connected successfully: d:gyan14:pubkey:pubkey
Published Temperature = 28 C Humidity = 55 % to IBM Watson
SensorData Invalid
Published Temperature = 28 C Humidity = 55 % to IBM Watson
SensorData Invalid
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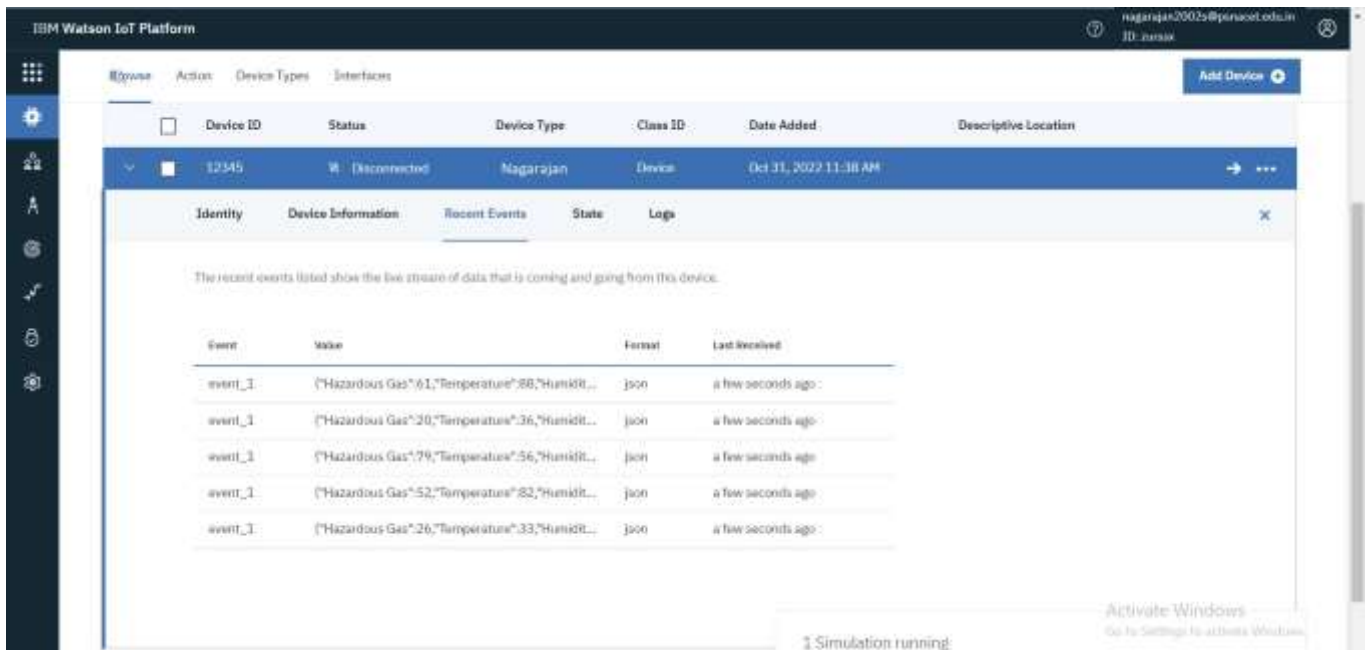
```

### Step-3: checking your data sent on IBM Bluemix:

- After you have sent your sensors data you can check whether it is received at your iot platform Just look at the image below and if u see the same wifi kind of symbol on your created device then your data is being received.

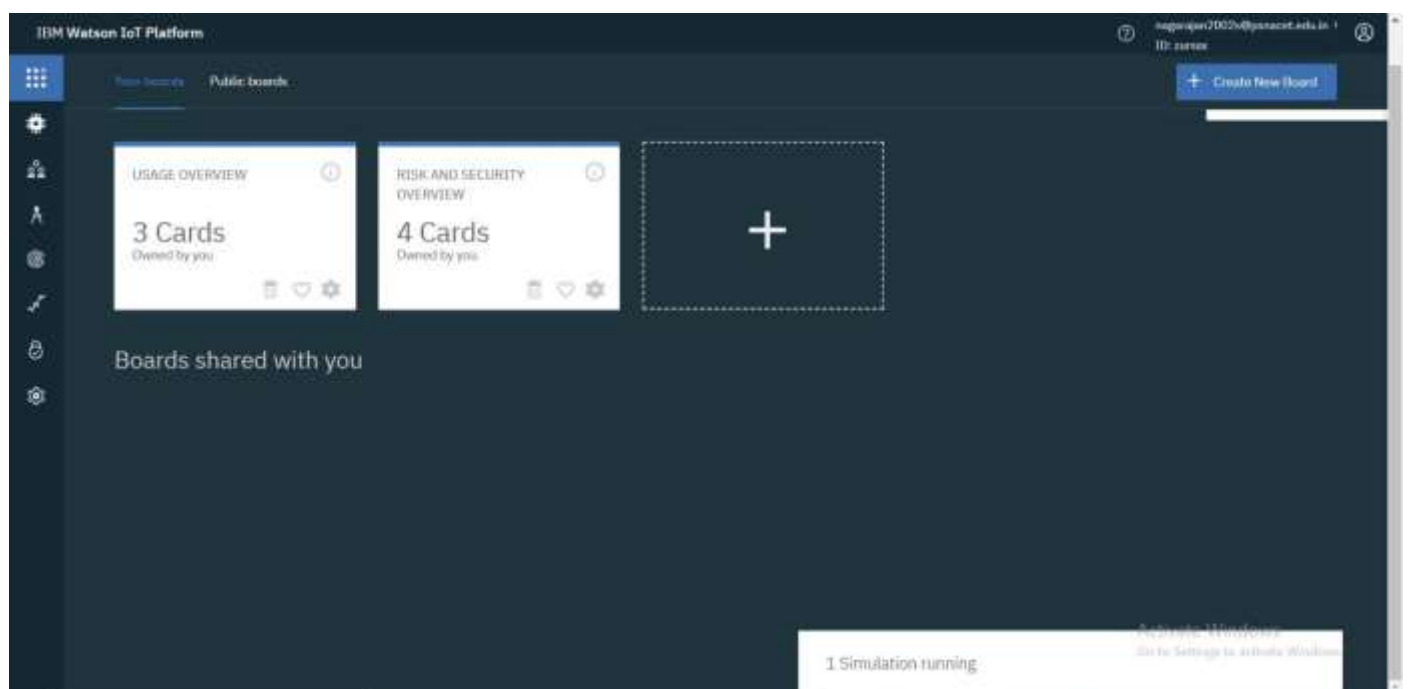


- After double clicking on your created device you can see the received data as shown in image



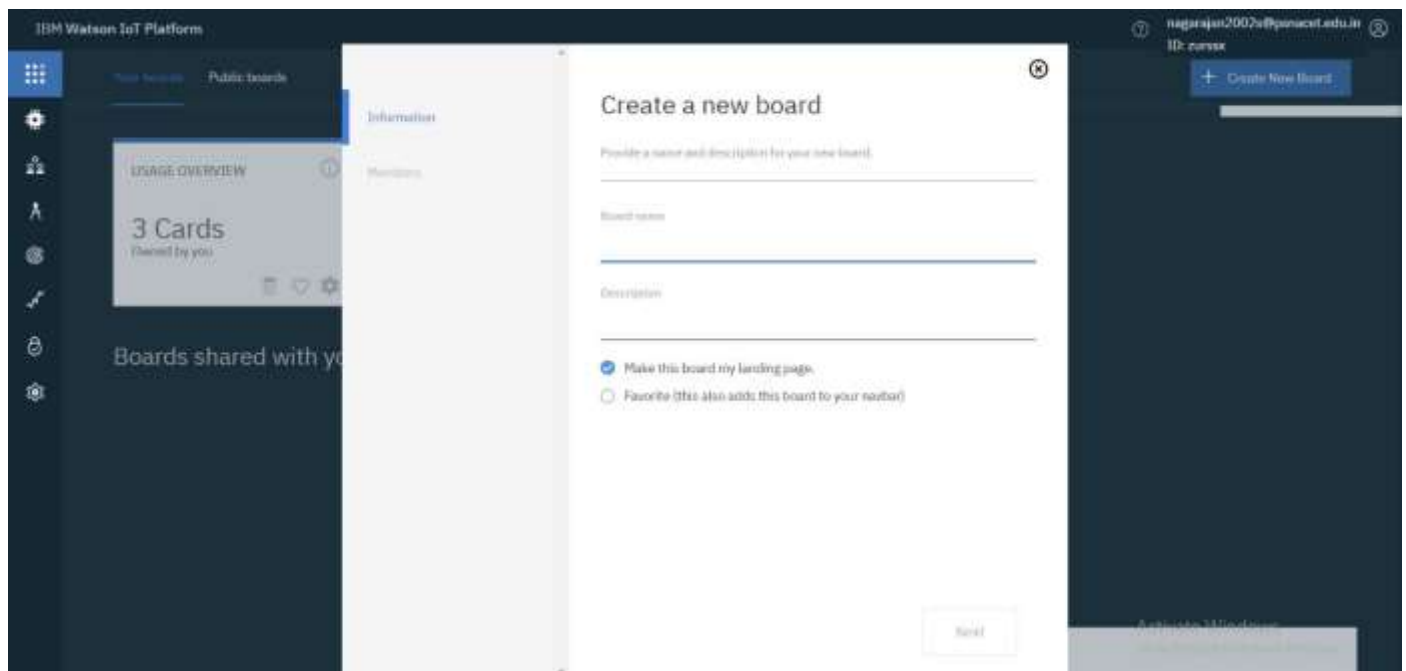
#### Step-4: Creating boards and cards for visualization of data:

- In your Watson platform you have an option called board .Click on it and you get the following window on your screen

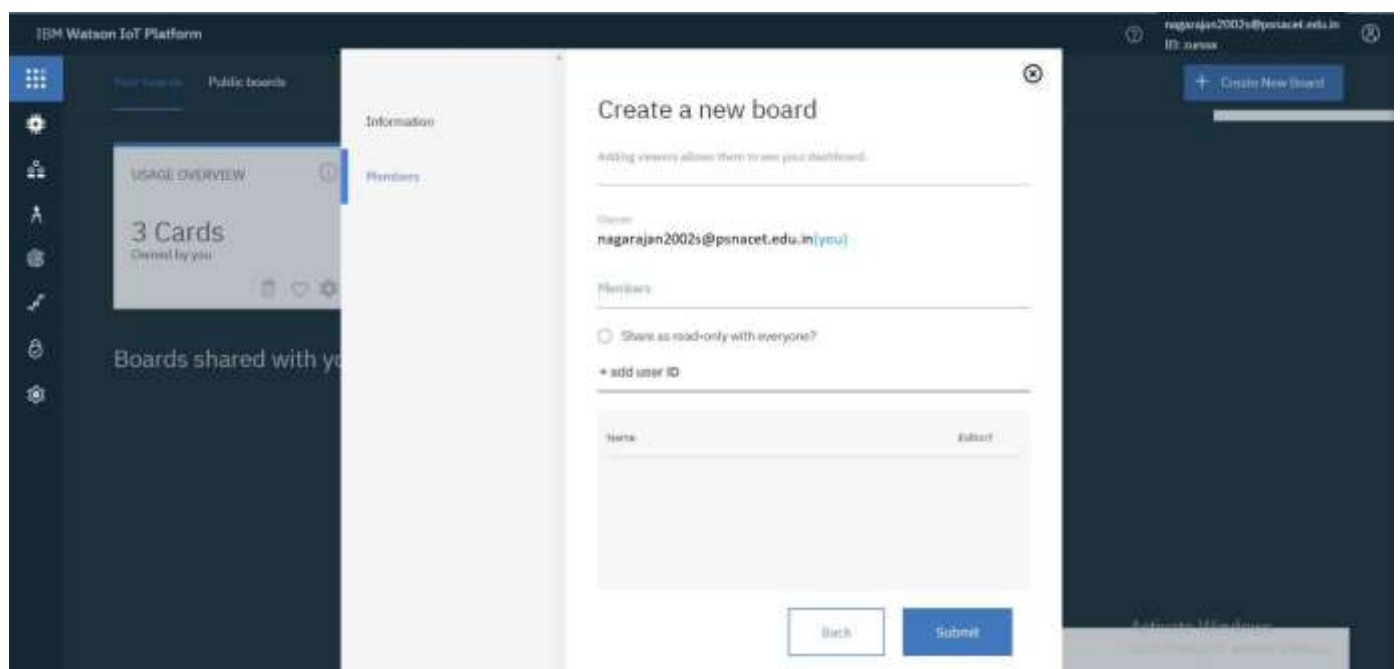


- Click on Create a new board to create a board .

The given below window appears give a name and description to your board as shown in the window below.

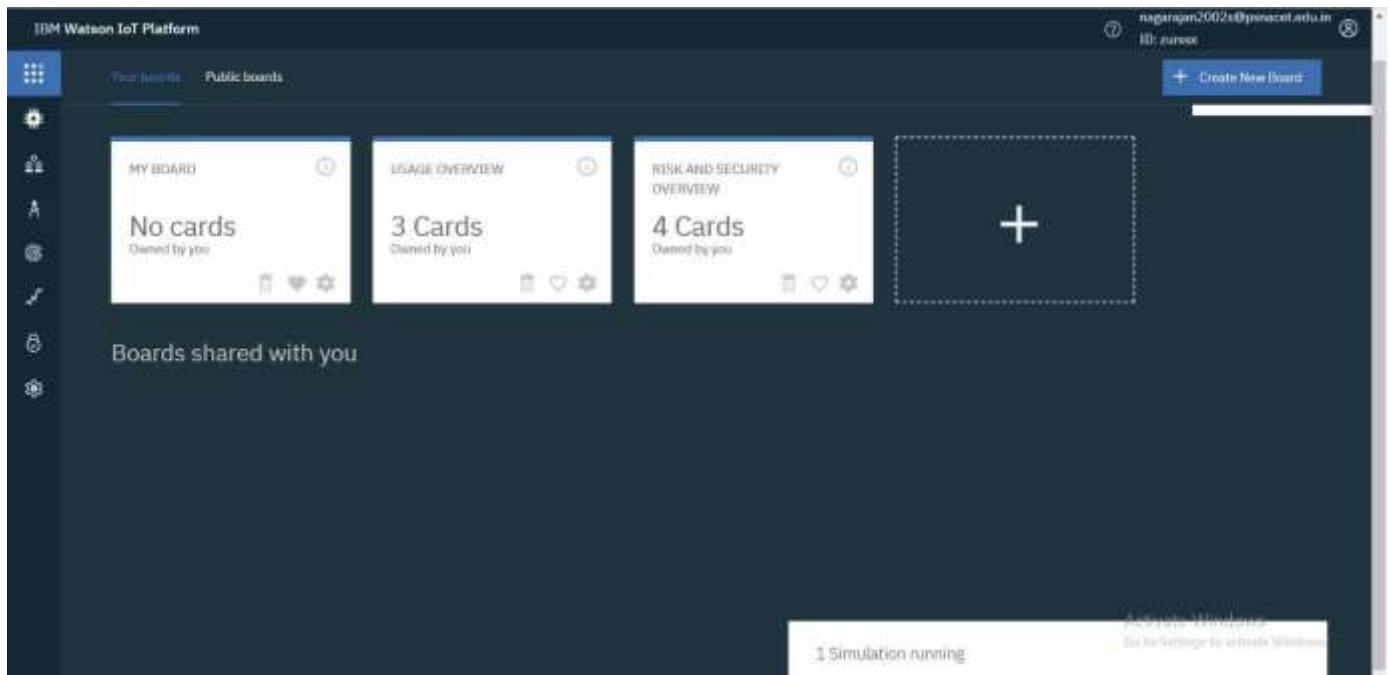


- Then click on Next you get the below window then again click on Submit

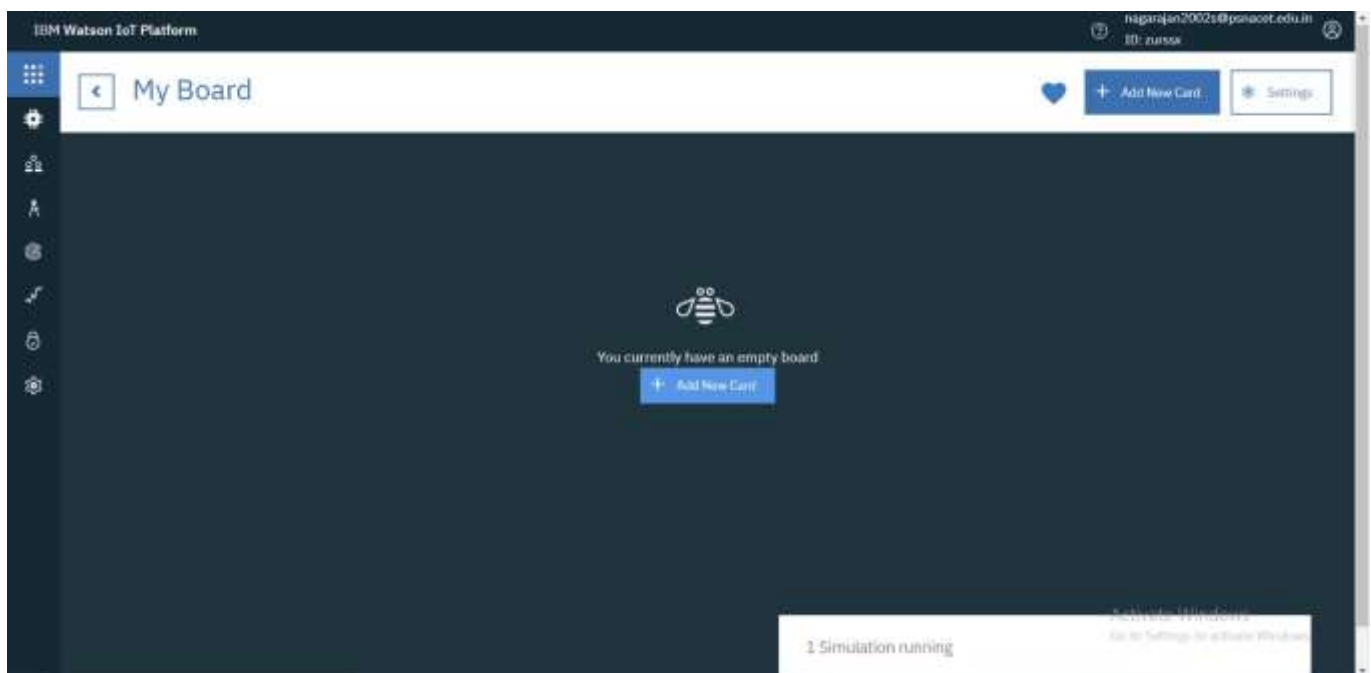


- Then double click on your boards name which you have created.



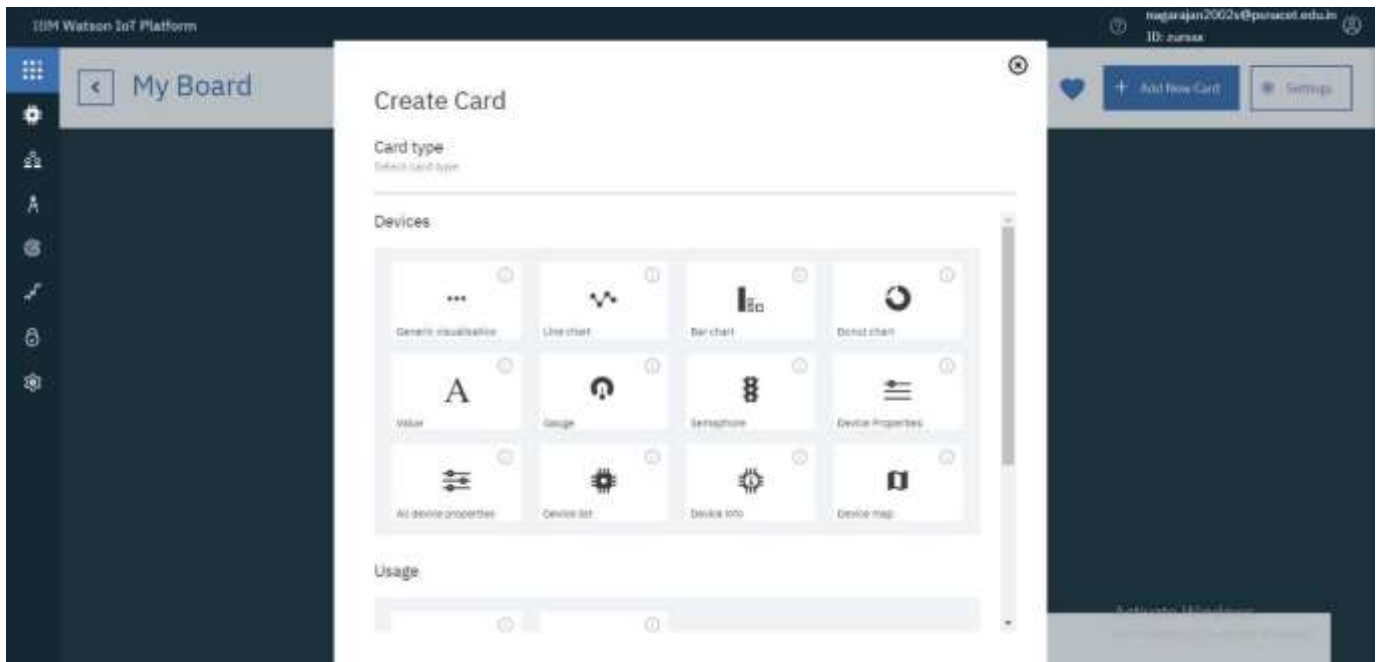


- Click on Add New Card

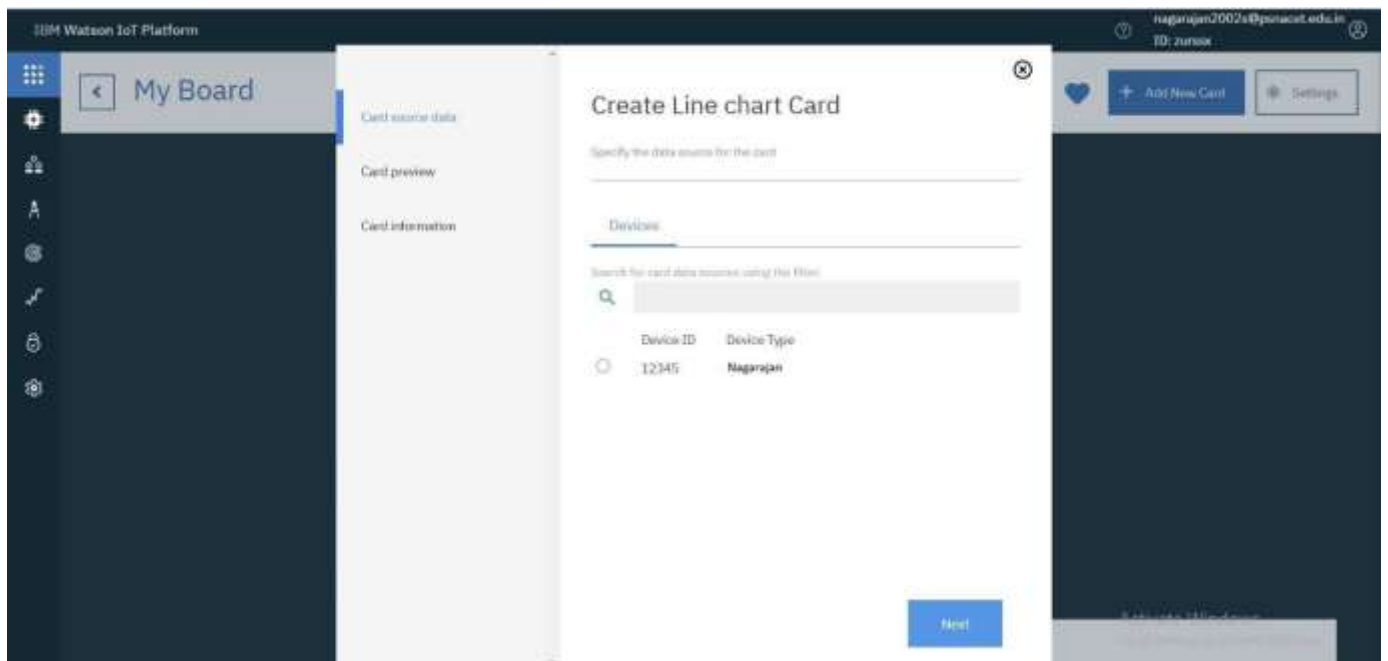


- Select the type of Graph u want accordingly and click next

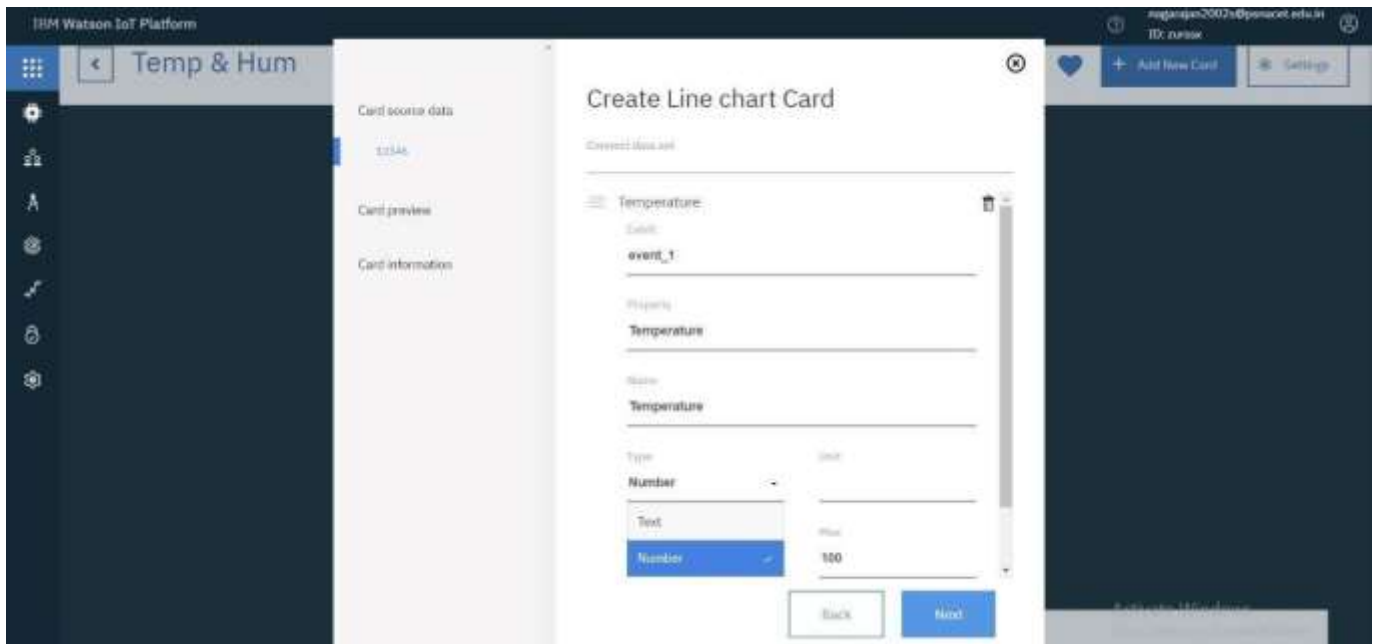




- You get the below window, choose the Device and click on Next.



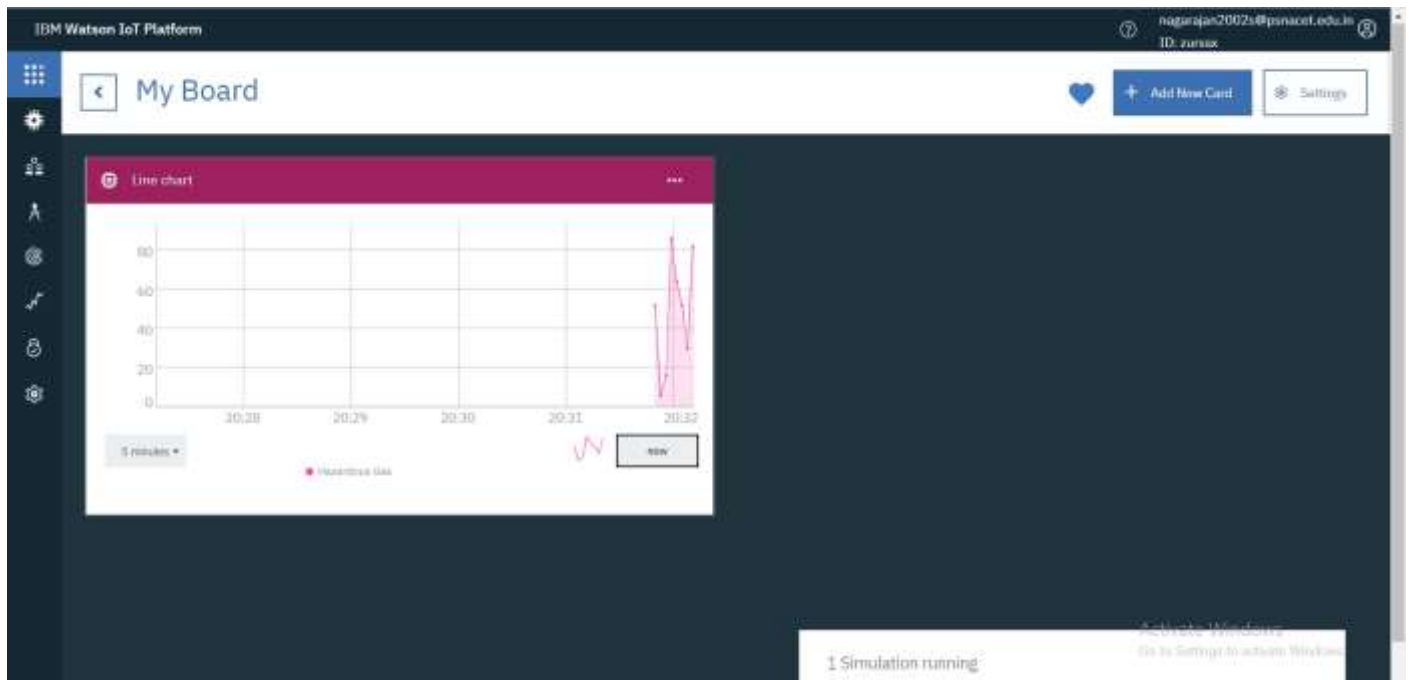
- Select the event, properly to be visualized on your graph and click next. In my case it is humidity



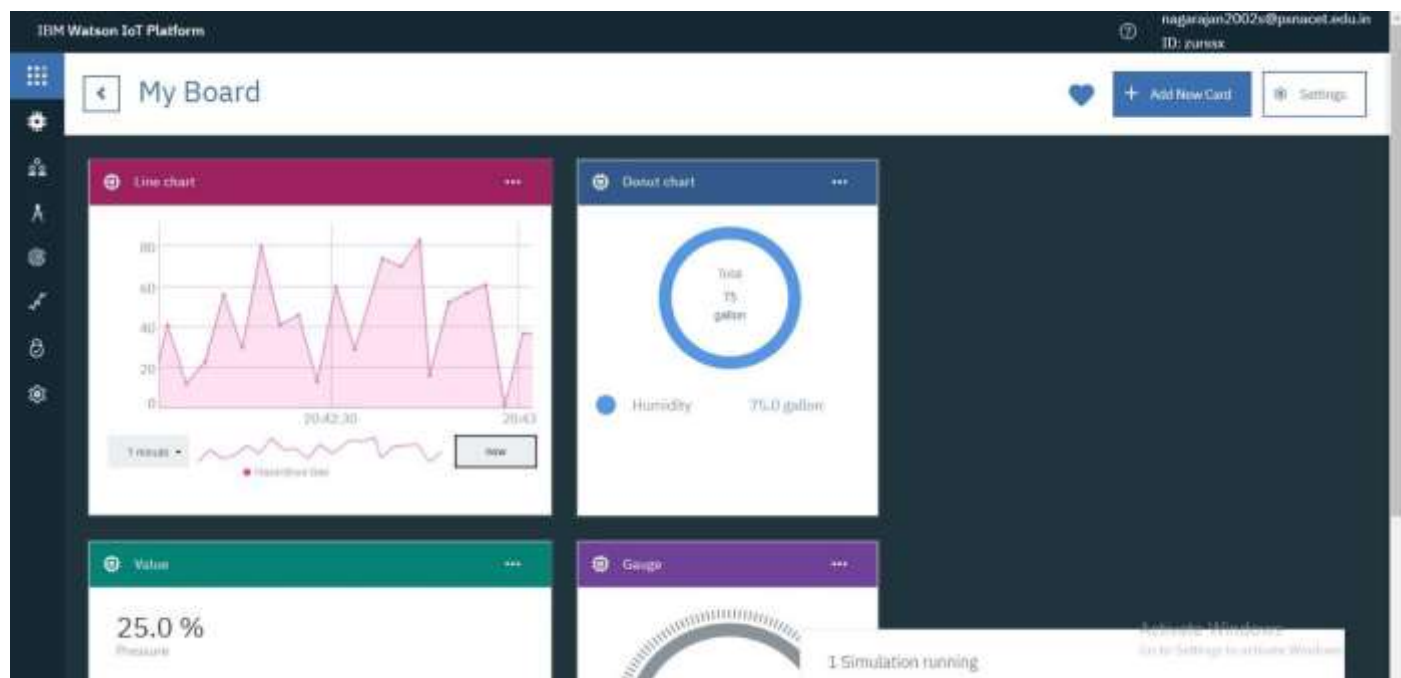
- Then select the size of the graph and color of the graph board you want and click next

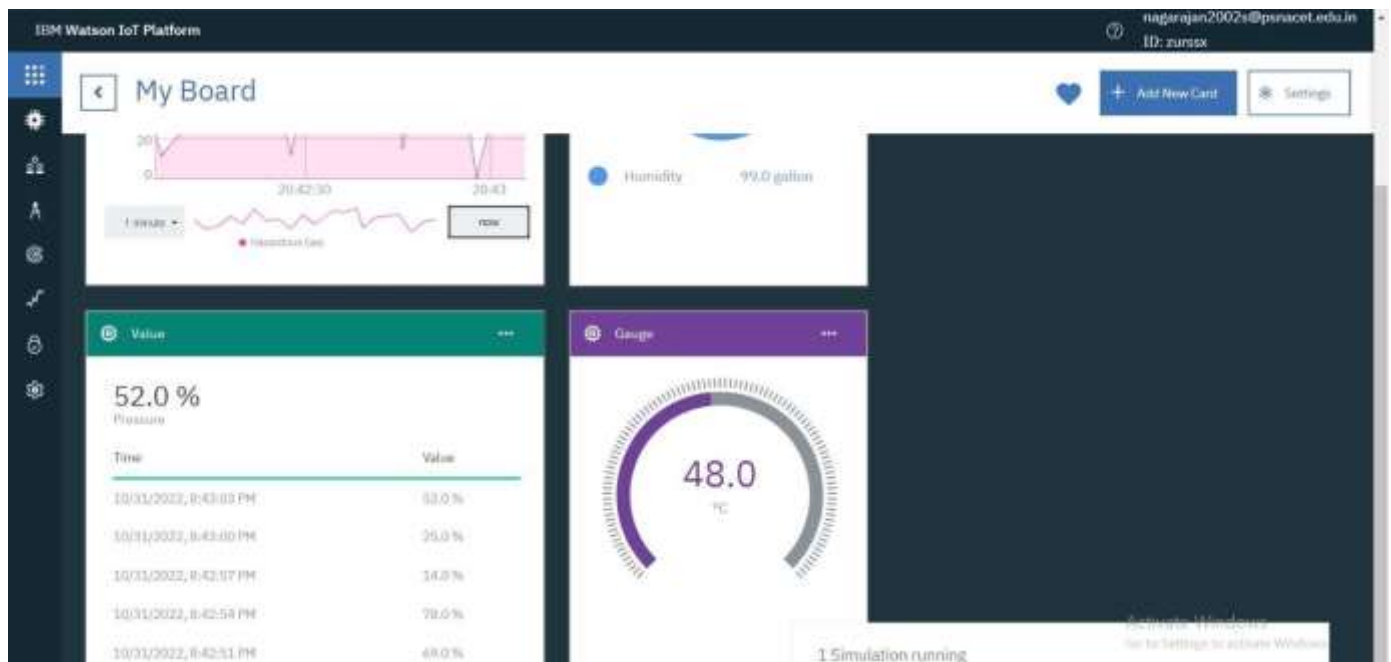


- Here is the graph



- Repeat the process to get different graphs.





## RESULT:

Hence, we were able to send data from our pi to IBM Watson and visualize it on a graph.