AIR QUALITY MONITORING SYSTEM

Objective:

Pollution is the major problem not only in one country but all over the world according to World Health Organisation (WHO). So to prevent the pollution first we have to detect some gases such as CO, O3,NO2,etc.These gases causes pollution and are more dangerous to human health which leads to lung cancers, dizziness, cough, etc .These gases can't be detected through simple vision. In most of the urban areas this pollution became the major problem which is because of releasing of gases through motor vehicles as well as by industries. To detect such types of gases scientists have been using some primitive methods i.e., collecting air samples in certain areas and analysing those in laboratories. But these methods are inefficient and expensive. Then scientists used to make use of IoT and sensors equipments which are basically worked out by the technology of IoT

Sensors and IoT devices are made using Internet of Things (IoT).These sensors helps to monitor the dangerous gases which are dissolved in air and to know the air quality. By using sensors we can easily monitor the pollution percentage in the environment. For example, in a city where it is crowded if attached with these sensors detects the information about pollution levels and air quality in that certain area and sends it to cloud of monitoring and prediction of pollution can be solved by using IoT devices and sensors. The greater occurrences of human heart disorders in society have been linked with high levels of particulate matter. Fossil fuels burned and the atmospheric emission of carbon dioxide is warming the world

Methodology:

Air quality control over a web server is used by our IoT based air pollution control system to display the results online. A notice will be given if air quality reaches a certain degree of toxicity, and there will be adequate concentrations of harmful gases, including CO2, smoke, alcohol, benzene, NH3, and NO2. The system uses air sensors to sense and transfer this data for the microcontroller. The microcontroller then stores the data on the web server

Literature servey:

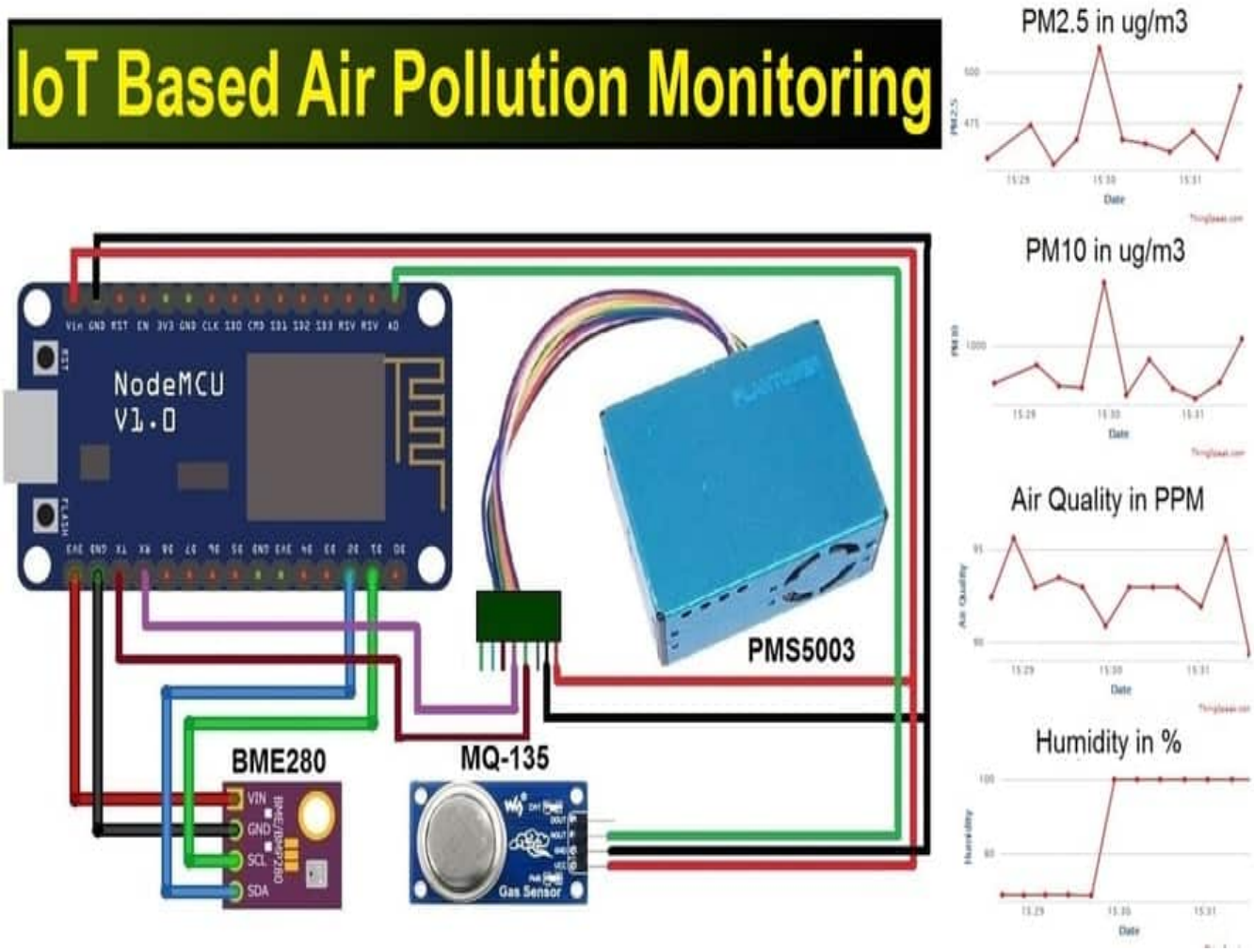
In this discussion, an IoT based air pollution monitoring system was studied. This system can be used for monitoring air pollutants in a particular area. The process of analysis and forecasting was also being done. This process was done using machine learning algorithm called recurrent neural network specifically long short term memory(LSTM) [1]. In urban areas the air pollution is comparatively high .The air quality in urban areas degrades because of emission of smoke from vehicles and toxic

Discussion:

Pollution was the major problem in smart cities and urban areas. Due to that pollution,

many people had been diseased. So, all the papers have bothered about the monitoring and eradication of pollution. It had been said that to eradicate the problem of pollution first the polluting gases in air should have to be monitored. Those pollutants can be monitored using IoT technology. The toxic chemicals were identified by IoT devices and sensors. It had been discussed that the IoT sensors attached

IOT based air quality monitoring



Application:

Home automation: To monitor and control the ambient conditions in a home, such as temperature, humidity, and air quality.

Commercial buildings: To optimize the ambient conditions in commercial buildings, such as offices, schools, and hospitals.

Industrial settings: To monitor ambient conditions in industrial settings, such as factories, warehouses, and mines.

Agricultural environments: To monitor and control the ambient conditions in agricultural settings, such as greenhouses and animal enclosures.

Transportation: To monitor the ambient conditions in transportation vehicles, such as airplanes, trains, and buses.

Python code to implement AQM

```
    res = int(res_data)



if res <= 50:

  remark = "Good"

  impact = "Minimal impact"



elif res <= 100 and res > 51:

  remark = "Satisfactory"

  impact = "Minor breathing discomfort to sensitive people"
```

```
elif res <= 200 and res >= 101:

    remark = "Moderate"

    impact = "Breathing discomfort to the people with lungs, asthma and heart diseases"



elif res <= 400 and res >= 201:

    remark = "Very Poor"

    impact = "Breathing discomfort to most people on prolonged exposure"



elif res <= 500 and res >= 401:

    remark = "Severe"

    impact = "Affects healthy people and seriously impacts those with existing diseases"



print(remark)
```

```
print(impact)
```

Output:

Satisfactory

Minor breathing discomfort to sensitive people

2. **Implementation:**

```
 # Traverse the air quality


res_quality = soup.find(class_="DonutChart--innerValue--2rO41 AirQuality--extendedDialText--2AsJa").text


# traverse the content


air_data = soup.find_all(class_="DonutChart--innerValue--2rO41 AirQuality--pollutantDialText--3Y7DJ")


air_data=[data.text for data in air_data]


print("Air Quality :", res_data)


print("O3 level :", air_data[0])


print("NO2 level :", air_data[1])


print("SO2 level :", air_data[2])


print("PM2.5 level :", air_data[3])
```

```
print("PM10 level :", air_data[4])


print("co level :", air_data[5])
```

Output:

Air Quality : 85

O3 level : 67

NO2 level : 22

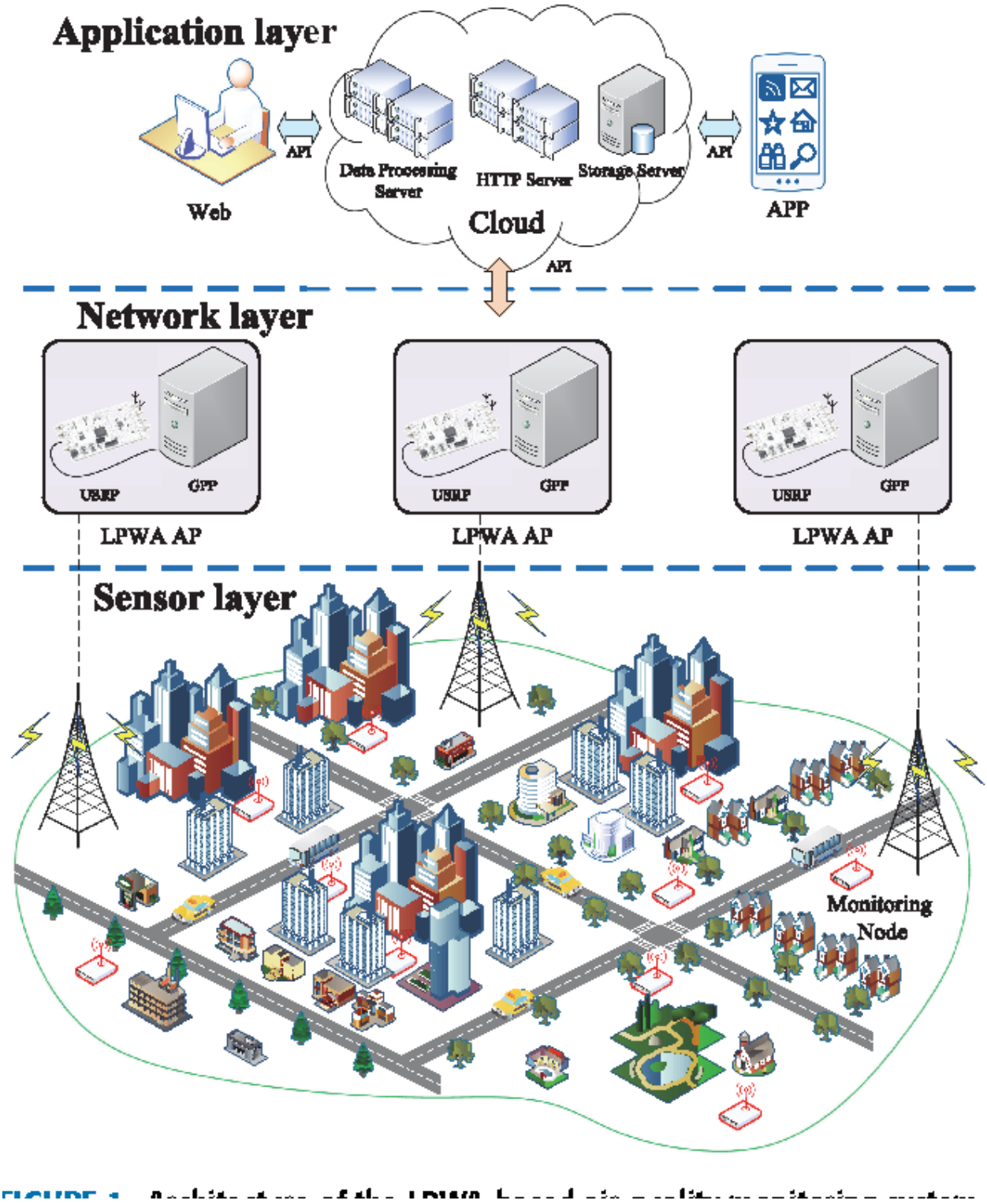
SO2 level : 13

PM2.5 level : 30

PM10 level : 45

co level : 479

Design and implementation of LPWA-based air quality monitoring



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