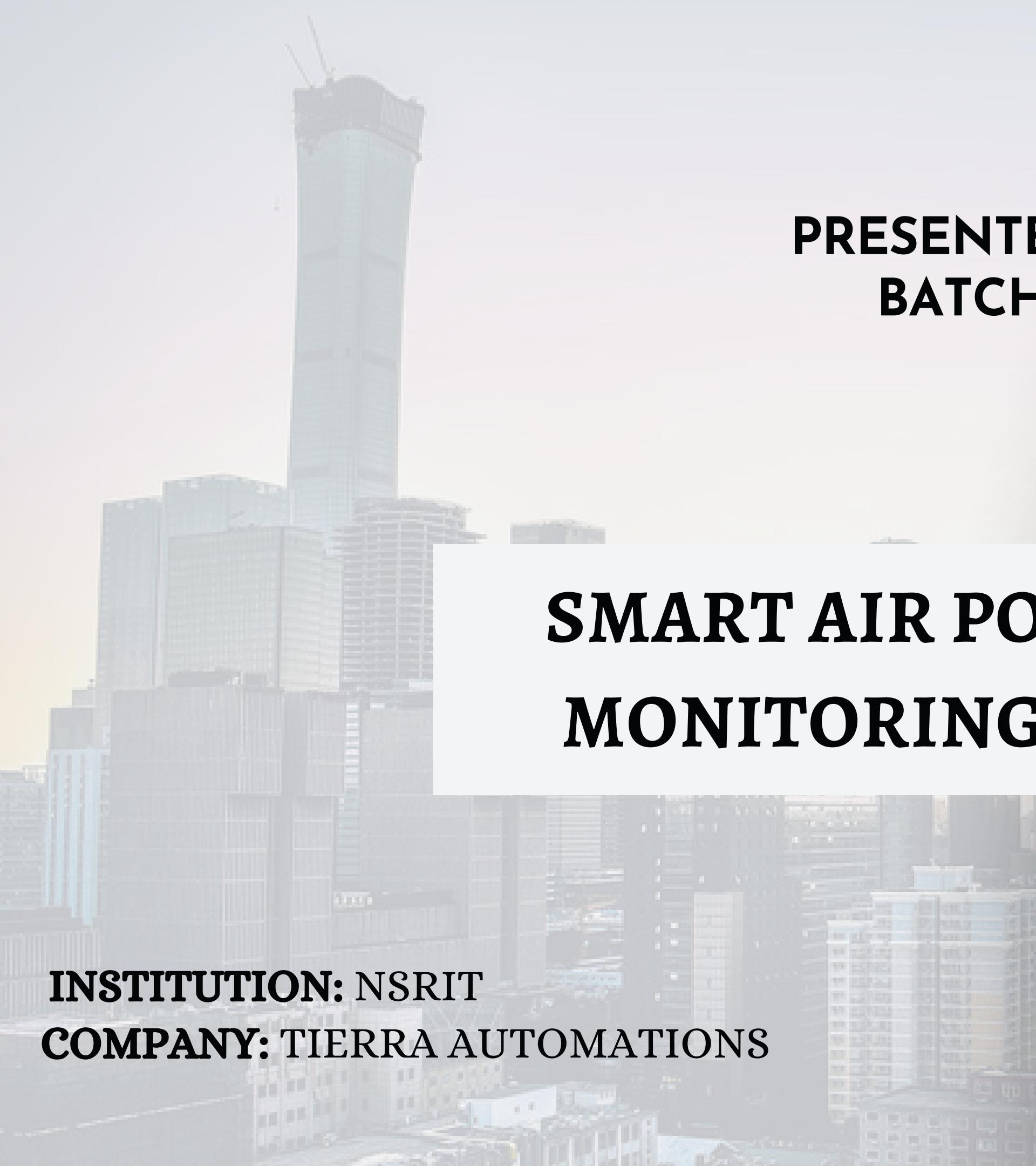
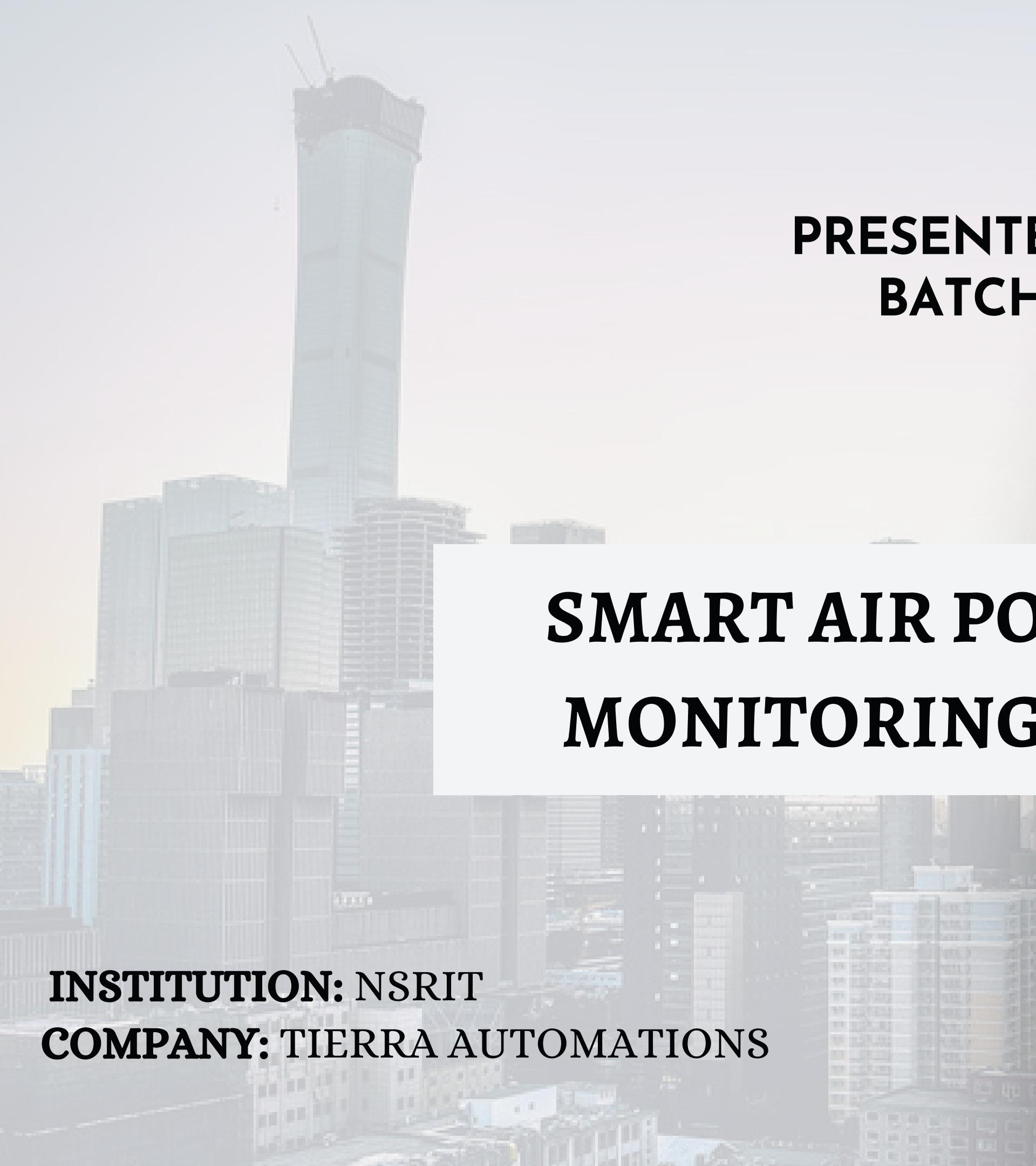


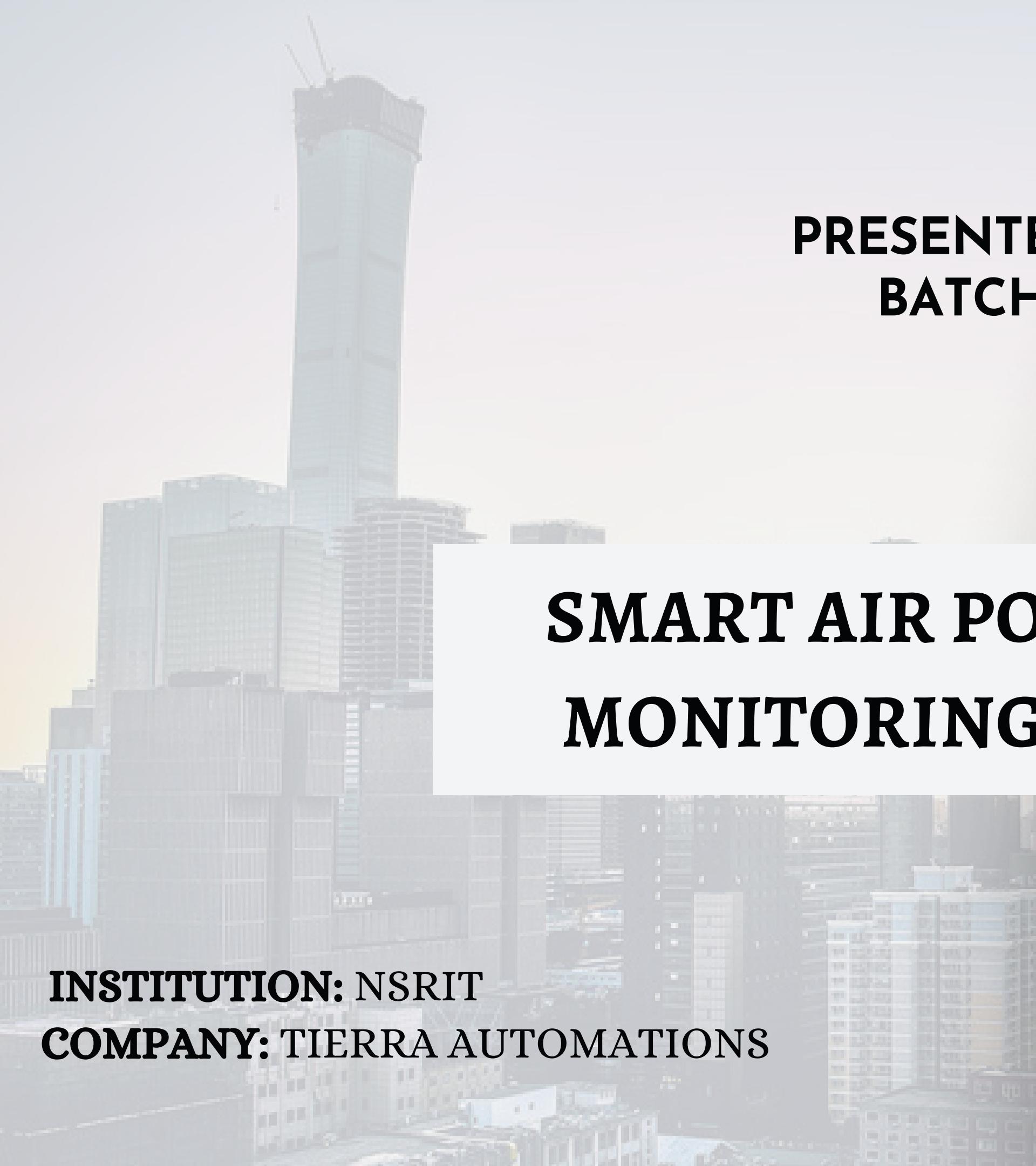
**PRESENTED BY
BATCH 2**



SMART AIR POLLUTION MONITORING SYSTEM



INSTITUTION: NSRIT



COMPANY: TIERRA AUTOMATIONS



INTRO

- Polluted air became the major issue in cities these days due to toxic gases released by human activities which directly effects human health. This needs special attention further.
- The system we developed uses the gas sensors to detect the presence of harmful gases present in the air and constantly transmits data.



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PROJECT OBJECTIVES

This device uses a gas sensor which detects harmful gases and calculates the air quality around the particular area.

The main objective is to monitor, analyze and log data about air quality to a remote server and maintain the data over the internet.



HARDWARE COMPONENTS

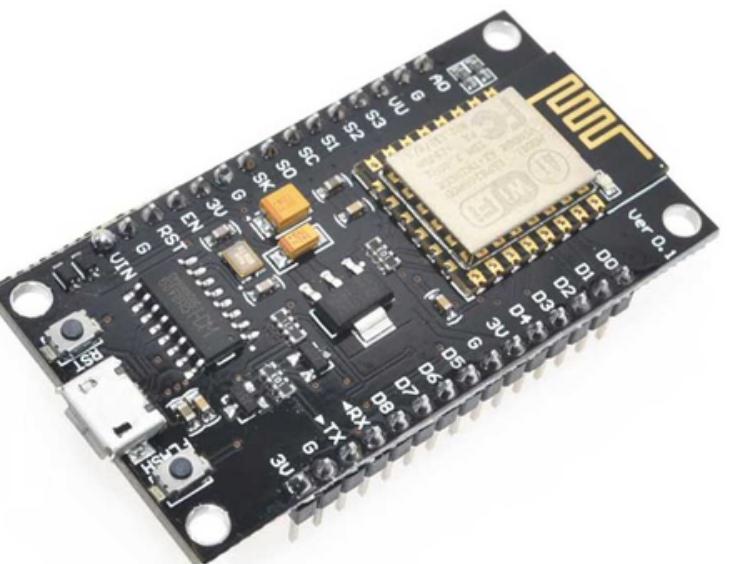
SENSOR

MQ-135 gas sensor



MICROCONTROLLER

ESP8266

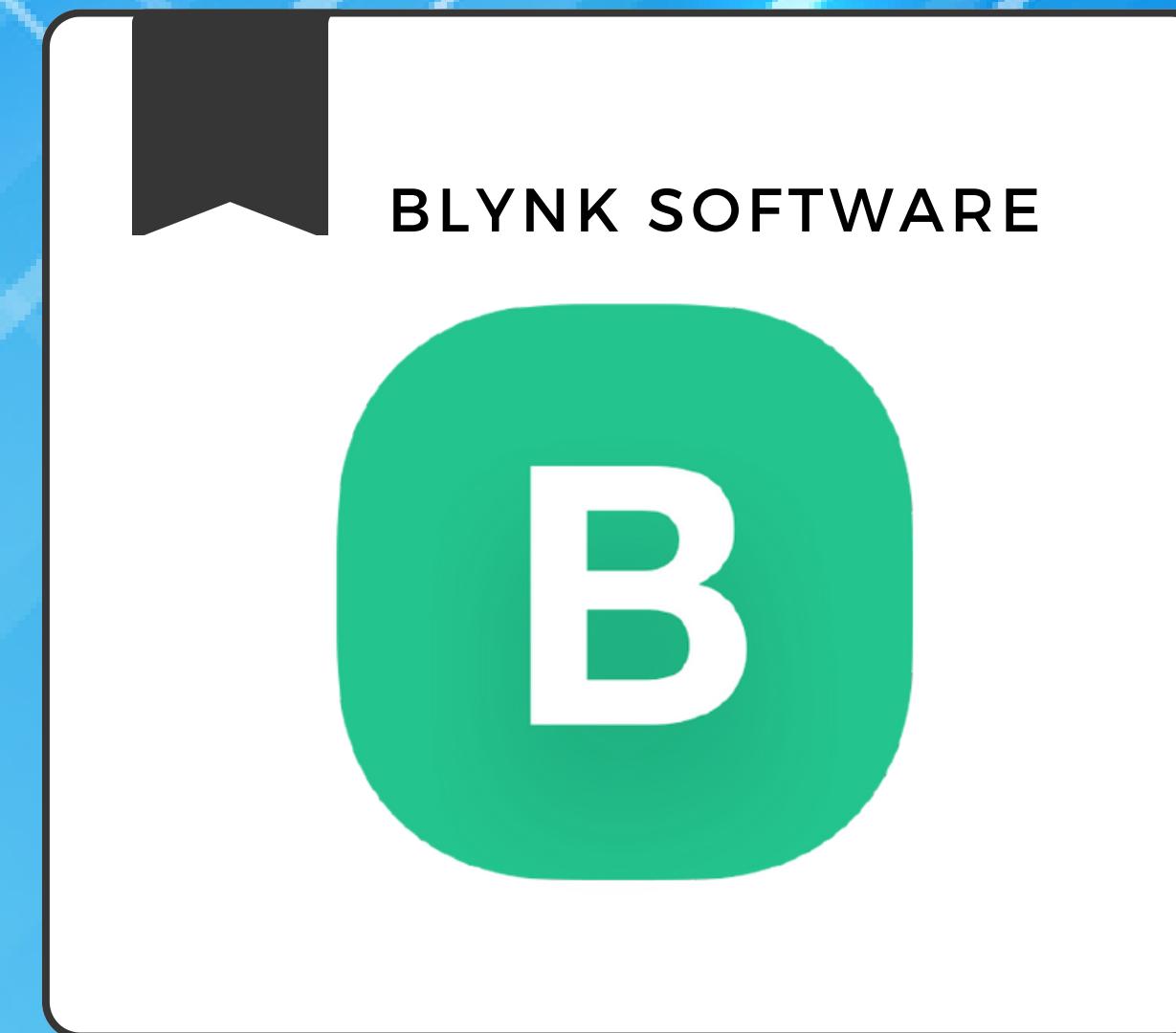


DISPLAY

I2C LCD



SOFTWARE COMPONENTS



ABOUT THE COMPONENTS

MQ 135 gas sensor

- This gas sensor is used to detect various gases such as alcohol ,benzene , carbon dioxide ,nitrogen dioxide ,etc.. This sensor gives the output in analog format .
- This requires some pre-heating before it could give accurate results. This MQ 135 gas sensor is different from other sensors because this is highly sensitive to Ammonia ,Sulfide and also sensitive to smoke and other harmful gases and the other reason is it is affordable.

MQ 135 configuration:

| MQ 135 | ESP8266 |
|--------|---------|
| VCC | 3V |
| GND | GND |
| AO | AO |



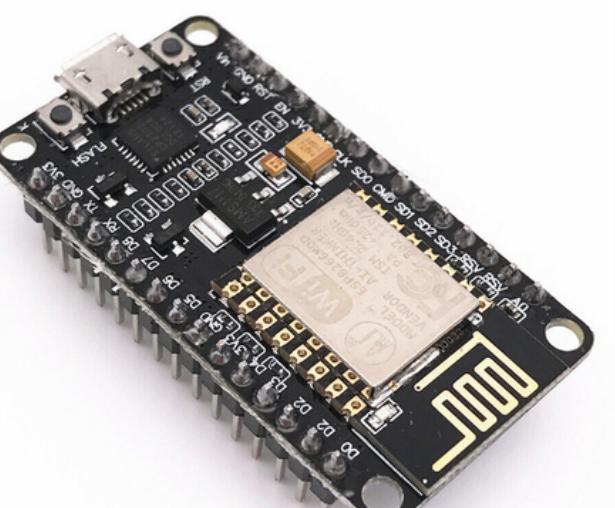


ABOUT THE COMPONENTS

MICRO CONTROLLER ESP8266



- ◆ The NodeMCU (Node MicroController Unit) is an open-source software and hardware development environment built around an inexpensive System-on-a-Chip (SoC) called the ESP8266
- ◆ It contains the crucial elements of a computer: CPU, RAM, networking (WiFi), and even a modern operating system and SDK. That makes it an excellent choice for Internet of Things (IoT) projects of all kinds.
- ◆ The ESP8266 12-E chip comes with 17 GPIO pins. Not all GPIOs are exposed in all ESP8266 development boards, some GPIOs are not recommended to use, and others have very specific functions.





ABOUT THE COMPONENTS

I₂C LCD DISPLAY

Actually ,LCD I₂C is composed of a normal LCD ,an I₂C module and a potentiometer.

pin out :

LCD I₂C uses I₂C interface ,so it has 4 pins:

- GND Pin: Needs to be connected to GND(ov).
- VCC Pin :The power supply for the LCD needs to be connected to the VV(5V).
- SDA Pin: I₂C data signal
- SCL Pin: I₂C clock signal

I₂C CONFIGURATION:

SDA Pin: D2
SCL Pin: D1 } since D1 and D2 are best pins





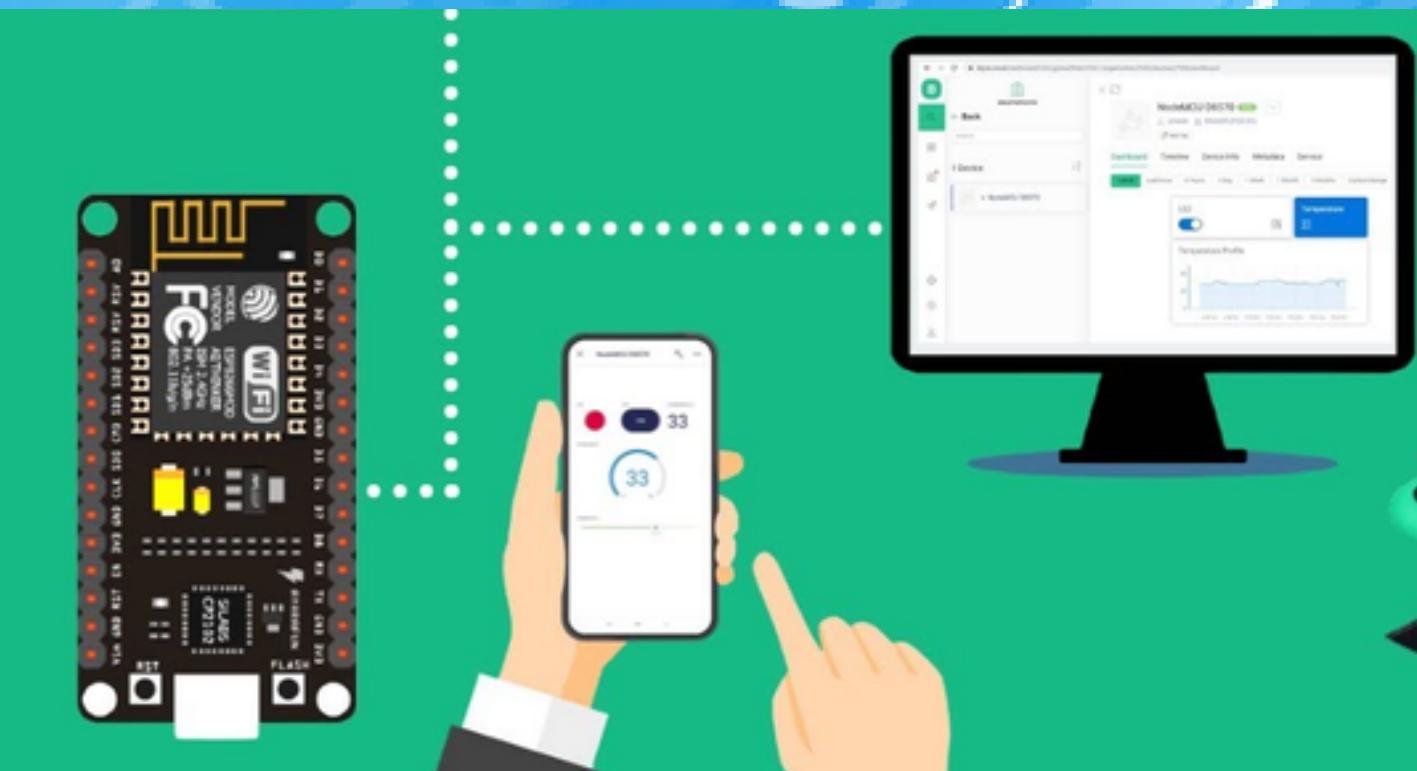
Blynk

Blynk 2.0

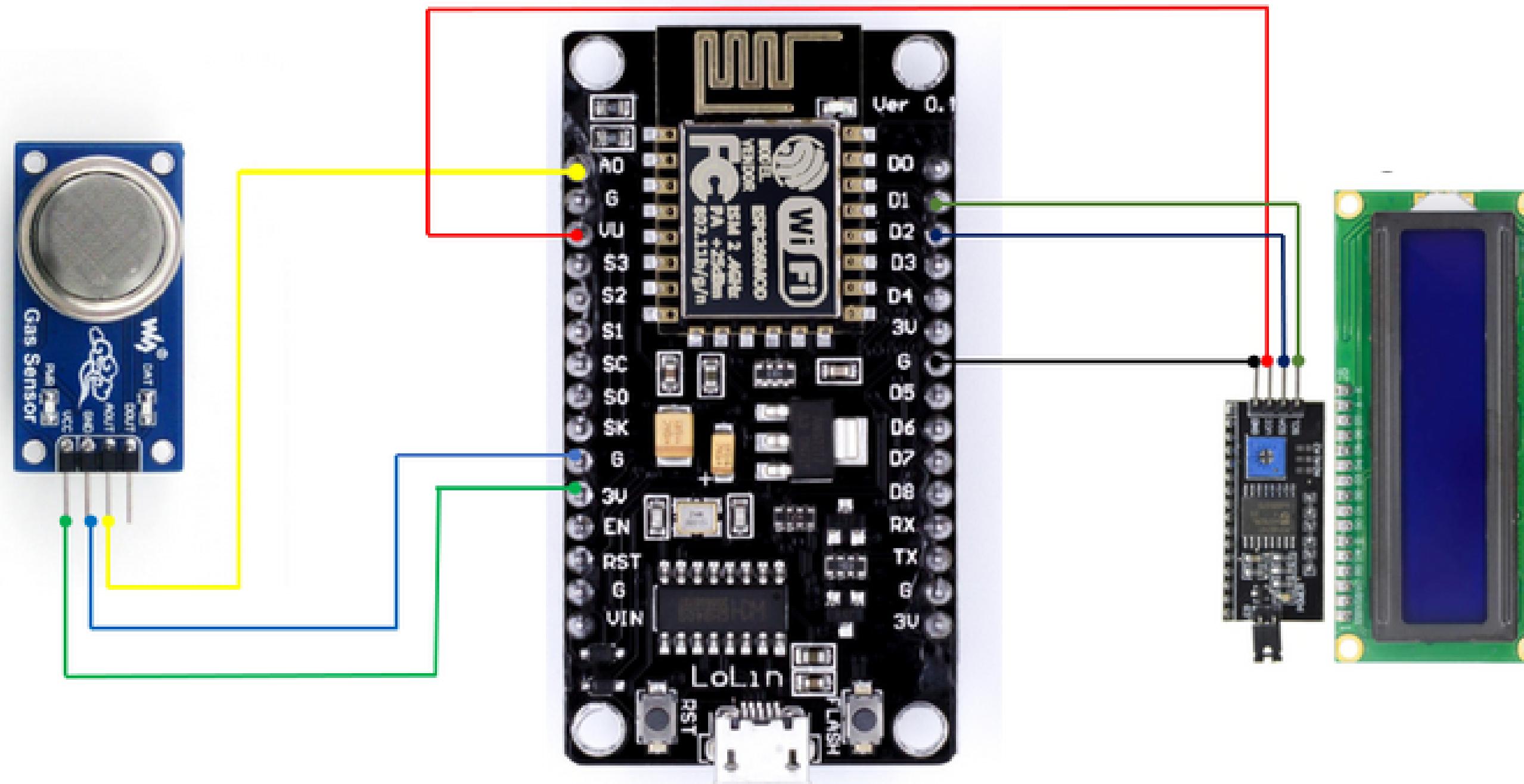
NodeMCU ESP8266

Blynk was designed for the Internet of Things. It can control hardware remotely, it can display sensor data, it can store data, visualize it and do many other cool things.

- **Blynk App** - allows to you create amazing interfaces for your projects using various widgets we provided.
- **Blynk Server** - responsible for all the communications between the smartphone and hardware. You can use our Blynk Cloud or run your private blynk server locally. It's open-source, could easily handle thousands of devices and can even be launched on a Raspberry Pi.



CIRCUIT DESIGN





OVERALL PROJECT

SMART AIR POLLUTION MONITORING SYSTEM

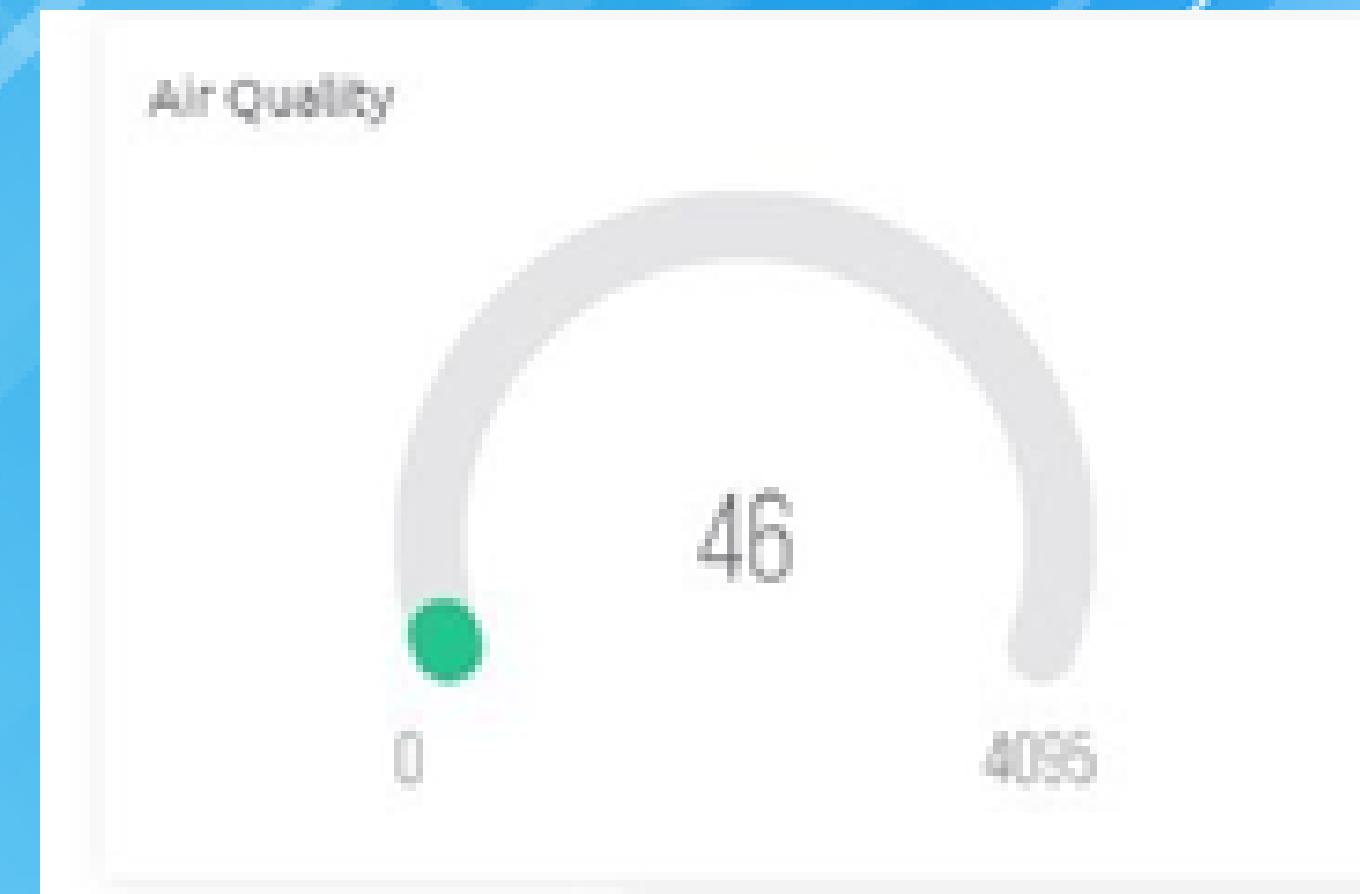
- The developed device is set up in a particular environment for which we are checking the air quality.
- The device has a Wi-Fi module through which it connects to the network.
- We would be dumping the code using Arduino IDE software.
- In the code itself the configurations and details of the Blynk App are given so that the device is now also connected to the Blynk software.
- Now after all the setup, we can now view the Air Quality (ppm) either in the device (I₂C LCD) or in the Blynk Dashboard.

THE RESULT

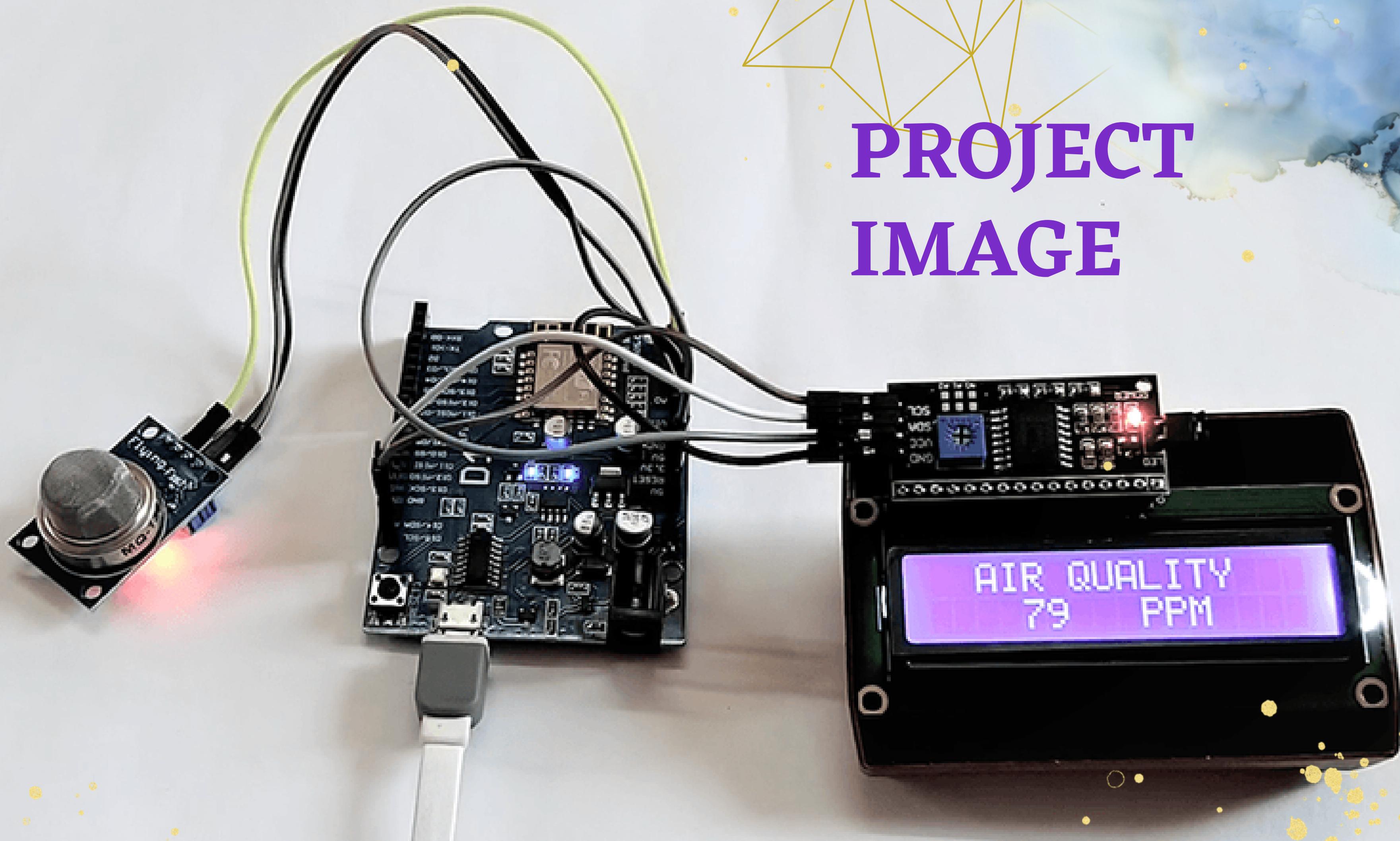


In the Blynk we create a datastream that displays the Air Quality in ppm over a meter and if there are harmful gases we would be sent a notification on our mobile phones through the app.

The air Quality value in ppm can be viewed from time to time in the I2C LCD display board. If the ppm value is far more than safe, we can see an alert displayed on the board.



PROJECT IMAGE



PROJECT CONCLUSION

Using this device we can monitor the air quality over a particular area, city or an industry.

As the quality of the air is updated to us from time to time, we could take necessary steps to prevent the pollution.

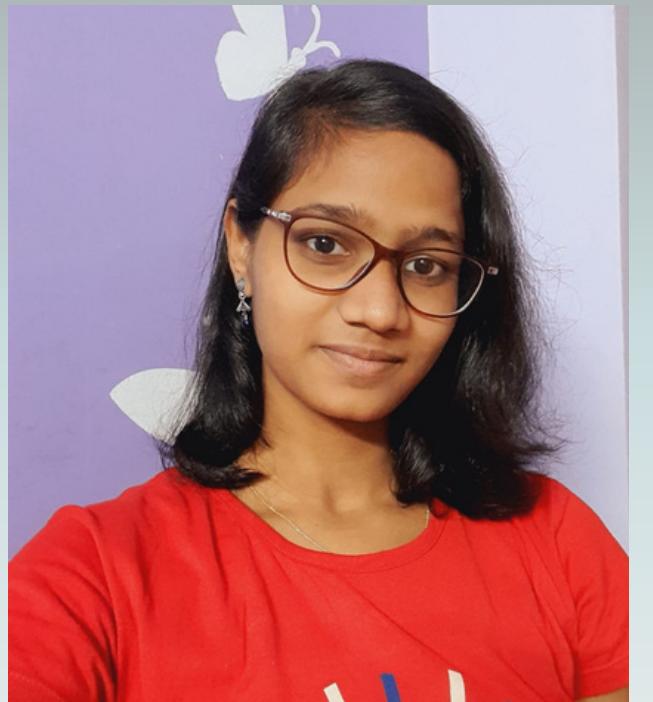
This particular project can be implemented as an idea in Smart cities.

FURTHER IMPROVEMENTS:

We can improve the project further by adding few other features, Some of them are listed here:

- Other gas sensors like MQ-6, MQ-4 can be added to the device to detect other harmful gases also.
- An alarm or a Buzzer can be connected so that in case of any alert we would be receiving a sound signal.
- Another feature can be said as an extension to the Blynk in which the software sends a mail to the personal mail id in case of any alert.

Our Team

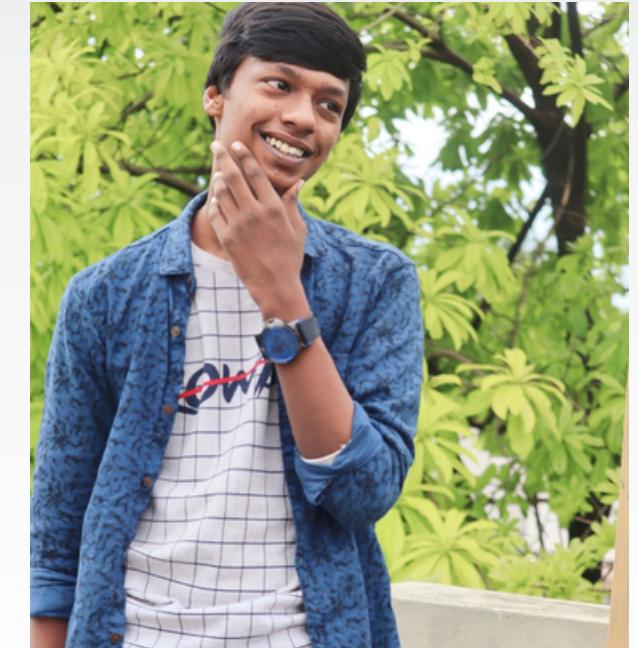


ALICE CROSBY

KIRANMAI

PRASEETHA

GOUS IMAM



NARESH

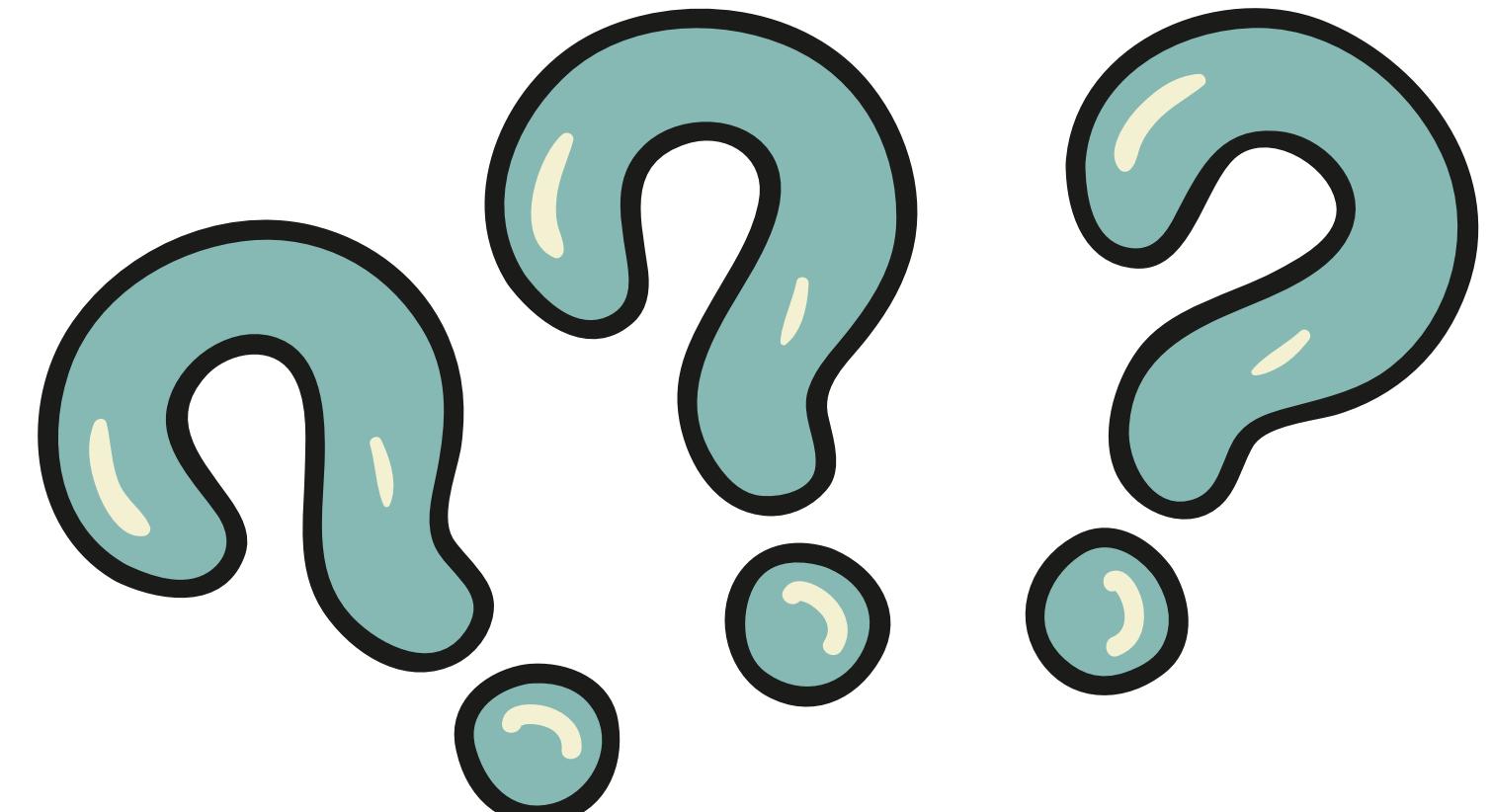
DINESH

CHANDARA RAO

VENKATA SAI



ANY QUERIES?



Thank
you!