Retraction

Retraction: Pollution Based Traffic Control System using IoT (J. Phys.: Conf. Ser. 1916 012189)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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Pollution Based Traffic Control System using IoT

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Abstract. With the rise in vehicle use, the amount of emissions at road intersections has raised, causing harm to those who are connected directly to it. It is proposed to control emissions using the Internet of Things (IoT) over stoplights, the ventilation levels of vehicles, and also the consistency of living air. The Internet of Things (IoT) carries out signals. A sensing element and a temperature probe are used in this prototype system. Carbon dioxide, greenhouse gases, and other toxic gases are identified by a sensor. In the air, carbon dioxide, dust, acid, and moisture are present. This analysis is accurate, distributed to the microcontroller on a daily basis and published to the web browser. The Wi-Fi module is a piece of hardware that allows to connect to the internet. On this basis the ON/OFF road markings modify the timing thresholds automatically. At traffic lights, this suggested technique degree of control emissions and climate.

Keywords: Pollution, Traffic Light, WiFi, IOT

1. Introduction

The use of automobiles on a wide scale has raised the standard of living in recent years. Using the largest information and communications of automobiles on the road results in various forms of emissions, such as air pollution. Carbon emissions and traffic noise are also hazards. These hazardous gases have an impact on health. These emissions have an effect on humans as well as plants and wildlife. Pollution in the air may be a concern. Coughing and wheezing can cause chronic obstructive pulmonary disease (COPD). Infection rates grow as a result of this. The Pollution levels is more likely to have an impact effect. People in large cities are the people that are most damaged. This has the effect of causing chronic conditions. People who have respiratory issues are the ones who are most harmed by toxins in the air [1]. Out of a total of 100 percent, 70% of the air is contaminated. Pollution is caused by automobiles emitting polluting gases. The danger of releasing Polluting emissions is more prevalent at traffic lights, where individuals are subjected to the gases for extended periods of time span. This result in a variety of chronic pathologies. Population over the age of 60 is especially vulnerable. This traffic signal control method is more smart and reliable. The amount of polluting gases released by the vehicles at the crossing is measured by this unit [2].

The gas and pollution sensor at the interchange detects pollution released by cars, and if the sensor detects them, the intersection is closed [3]. If the amount of released gases goes high, the traffic lights
in that direction will be delayed doubled in complexity [4]. This helps to minimize traffic congestion while also reducing the risk of pollutants escaping from the car, automobiles. The traffic signals work normally when the gas levels are usual. The details on the data on toxic gases are sent to a web browser, which saves it. This aids the government in taking the necessary steps to will the quantity of waste generated. These toxic particles have an especially harmful effect on children [5].

2. Literature Survey

[6] addressed an “IoT-based automated traffic signal monitoring system based on vehicle count”.. The term "Traffic Monitoring System" refers to a system that tracks traffic. Signal timing has been developed using a variety of hardware devices found in IoT. The Internet of Things network is used to increase capacity by selecting various times to different road markings depending on their location. The total volume of cars on the lane. Traffic control system will help customers find out what they need. In any area of their locality in any region, timing availability and traffic flow count.

[7] suggested the “Atmosphere and Sound Pollution Prevention Scheme”. There's another step forward seeking a solution to the world's most important problem. The air and noise control system is intended to solve the issue of highly polluted areas, which is a big issue. The significant source of concern It promotes the use of modern innovation while also recognizing the role of traditional values. The value of keeping a balanced lifestyle. This system has functions that allow consumers . They can use an iphone to monitor air pollution. As a response, the Municipality has taken action. Soldiers and Organization officials alike become highly dependent and successful in their work and tracking of the environment It allows civilians to participate.

[8] proposed “a new actual traffic control system” that employs face detection to maintain speed limits. In each stage of the stoplight operation, a webcam is used to snap photos of the roads where traffic is frequent. The Matlab's image processing programme is used to check the amount of vehicles in these images, and depending on the count, various timings are allocated, and also a green signal for cars to proceed pass with flying. LEDs are used to reflect the green and red signals in the generated signal .A seven-segment monitor reflects the green signal's early hours of today timer.

[9] described a clever plan. Things are as they are. Growing traffic control are two of the world's most serious problems. The Internet of Things (IoT) and the “Adaptive Neuro Fuzzy Inference System” are used in this study to boost traffic conditions (ANFIS). Using SIMULINK in MATLAB with inputs such as long waits and speed of vehicles, an ANFIS traffic light controller is being created. A camera records the traffic images, which are then transferred to the cloud. The Arduino UNO and the IoT cloud Platform were used in this project. After that, the image is processed on the server. The required control signals will be sent to the bus lanes with the aid of the ANFIS controller.

[10] showed a more efficient “digital-logic-based traffic control system” than existing systems. The effective drainage system (ITSC) operates on the assumption that “a car can go along if there is space for it,” and “the signal process.”until all of the new vehicles have gone. By adding traffic lights, it is possible to make traffic far more efficient. Sensor systems at each junction's crossings, and counting the number of vehicles on the road. A effective implementation of digital signal processing is the junction.

3. Proposed System

The MQ-7 sensor is used in the design system at the four-signalling intersection. Each sensor is located at the intersection and is operated by the Arduino Uno microcontroller and ESP8266 WIFI module. During the sensing procedure, the gas sensor MQ 7 is used to track the gases and measure the road traffic along the sensing path. In the event that the road was crowded, the average time was increased to 10 seconds and the traffic was enabled to pass the direction of traffic . The other three
transmitting routes follow this process. As per the proposed design, traffic flow and congestion should be minimized. The data on gases emitted into the air can be found here gathered in the cloud of Thingspeak. Another feature is also added, RF sender is placed at the emergency vehicle and RF receiver is placed at traffic signals. The Green signal is ON, in which that the way where the emergency vehicle come towards the traffic signal, where other sides are blocked. Figure 1 shows the block diagram.

Figure 1. Block diagram

4. Result
A better way to control traffic is to use IoT to track pollution instead of stoplights. We'll look at in this article. The arduino uno is a microcontroller with a wide range of applications. Other sensors, such as the MQ-7 smoke sensor and the DHT-11 humidity sensor, are connected to the MQ-7. An Arduino Uno to gather information such as CO2 levels in smoke, heat, and other variables. All of these elements must be considered. The delay values of traffic lights are calculated based on these. Traffic was relocated automatically after the system was updated. On four sides of the intersection, smoke and temperature sensors have been installed, and the values of four sides have been recorded. The amount of pollution, temperature and the humidity will all be recorded.

The WiFi sends relative humidity readings to the web server ThingSpeak, where they are saved. The data is represented graphically in ThingSpeak. The green light glows for a long time if the smoke particulate matter concentration is greater than 12. Since all of the junctions are slightly similar, if the
smoke levels are at the pattern that we have coded, it will be followed at all of them. (The standard timers of 30 and 60 seconds are used.) Figure 2 shows the outlook.

![Figure 2. Final Outlook of Pollution Monitoring](image)

4.1. Measurement of Smoke at Specific Time Intervals

The MQ-7 smoke sensor detects how much smoke is present. At the intersection, there was a puff of smoke. The module for Wi-Fi is used to transmit the message that has been saved to the server. The authorised data is encrypted in ThingSpeak. This is represented as a graph with smoke ppm on it. On the x-axis is time, and on the y-axis is distance. Figures 3-6 shows the graph results.

![Figure 3. Smoke concentration (Sppm) over time in ThingSpeak](image)

4.2. CO concentrations over varying periods of time

The CO formed at the junction is measured by the MQ-7 sensor. This information is sent to the server using Wi-Fi module. This will be accomplished with the aid of ThingSpeak. CO ppm is on the x-axis, and time is on the y-axis, so data is stored and visualized as a graph.
Figure 4. CO as a function of time in ThingSpeak

4.3. The total quantity of heat that was measured over a period of time

The DHT-11 sensor measures the temperature at the junction. The Wi-Fi module sends the private information to the server. To keep track of the results, ThingSpeak is used, and the visualization is done in the form of a graph. The temperature is on the x-axis, while time is plotted on the y-axis.

Figure 5. Temperature (Celsius) and time in ThingSpeak

4.4. Humidity levels at different time intervals

The amount of temperature at the intersections is measured by a DHT-11 sensor, and it is sent to a server primarily via Wi-Fi. ThingSpeak stores the approved data. With humidity on the x-axis and time on the y-axis, the data is described as a graph. The vertical axis is the y-axis. The humidity level decreases as the water level rises.

Figure 6. In ThingSpeak, humidity (Celsius) vs. time
5. Conclusion

CO and pollution levels increase as the number of vehicles increases, generating heat and limiting the moisture in the environment. To resolve this issue, the signals slowdown must be decreased. This road traffic pollution scanning can be used to figure out how much smoke is present. At stoplights, the heat are monitored. The red and green indicators could be set for different times. The quantity of flame, heat, and moisture in the traffic signal are controlled automatically. The real-time data on pollution, relative humidity, and water temperatures is provided by the WiFi air quality monitoring system. Using gasoline as well as moisture sensors, the developed technique converts toxic gases such as carbon monoxide (CO), carbon dioxide (CO2), smoke, ammonia (NH3), and moisture in the environment.

Sensors transmit data to the online server using Wi-Fi module. This information is sent to the microcontroller on a regular basis and reported to the user. Wi-Fi module connects to an operating system. The rates at which traffic lights turn on and off are called ON/OFF rates. As a result, the settings are done automatically. This proposed system makes use of ThingSpeak. At traffic lights, it control pollution and relative humidity. This will assist in lowering costs.

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