

Traffic Management by Monitoring Weather Parameters and Pollutants Remotely

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Abstract-The growing be counted number of motorized automobiles commonly in city regions have become outstanding purpose for dangerous surroundings and causing healthiness due to pollution. Systematic waft of automobiles can facilitate in discount of pollution. Use of generation is answer in site visitors, sensing pollution like carbon dioxide and CO inside the pathway of transit can facilitate in better cognitive method for the site visitor's government further at the commuters. The projected approach can be a whole IoT gadget to degree few climate parameters at a dense area with extensive site visitors and deliver the corresponding stay. The gadget makes use of a low-strength mini-laptop Arduino. The numerous sensors are trying to feel exceptional parameters like temperature, pressure, carbon oxide, CO, and humidness. The statistics accrued via way of means of the Arduino is sent to the cloud and keep on which may be considered via way of means of all people and wherever at any time. Future measures are taken mistreatment reachable recorded statistics if there are dangerous readings measured via way of means of the gadget got here upon at an area.

Keywords: *Traffic management, Arduino, Sensors, GPS & GSM Modules.*

I INTRODUCTION

1.1 Objective

Clean present-day air may be a fundamental need for any creature in this planet. Around 1.5B people in city regions stay with pollutants on pinnacle of counseled air nice steady with the reviews of the planet Health Organization (WHO) and approximately 7M people die due to pollutants every year. This has created people a whole lot of careful concerning pollutants in and round them. The publicity of residing creatures to infected air might also additionally motive changed into diseases. And will moreover motive inflammation and contamination in breathing track, bronchitis, breathing organ diseases, asthma. This might result in quick life of residing beings with painful deaths. The pollutants are growing to the risk stage

touching the way of life of the people. The people throughout the planet are involved concerning the surprising modifications in the climate. To manage pollutants initiative is to observe it well.

Exponential growth in variety of motors on avenue is main to pollutants, contaminating the placing due to dangerous gases, debris emitted all through combustion. In city towns there may be disadvantage of great site visitors due to negative control of site visitors which results up in unleash of extra pollution and growing the air dangerous at numerous places. Such places with critical site visitors motion should get at the observatory measuring instrument.

If the measured values a rectangular degree better than a secure stage, then government will take to want steps in abusive the site visitors thru one-of-a-kind routes. This assist in site visitors control and allow the rider to require the secure healthful path and abusive the site visitors end in stabilizing and reversing the various parameters returned to a secure stage. The gadget allows in having a reasonably practical nice of air for the parents at the streets and round.

1.2 Purpose of the Project

In this project, we established a system which mainly focus on Systematic flow of traffic. In addition to its basic features, we have established GSM and GPS modules to get continues update about Traffic.

This type of application will be more helpful for the people who are Stuck in Traffic, by giving them continues updates about Traffic.

From the results, we could attain the features like Traveller to grasp safe, healthy, much less congested routes. In handling and routing the visitors float in methodical manner which saves gas and enables in decreased contamination.

This project is not only useful for Traffic management but also adding some additional features and make it also control the pollution and make environment clean.

II.LITERATURE SURVEY

A literature review is a scholarly paper that present the current knowledge including substantive finding as well as theoretical and methodological contributions to a particular topic.

Gagan Parmar, Sagar Lakhani, Manju K. Chattopadhyay, "An IoT Based Low-Cost Air Pollution Monitoring System"

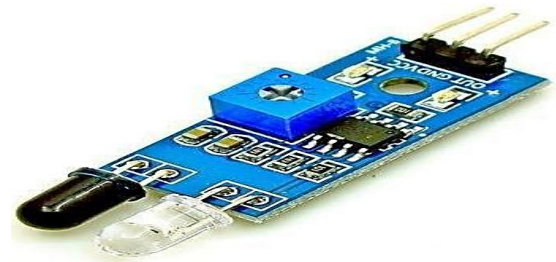
In a monitoring system is developed which gives the concentration of carbon-di-oxide of remote area. The system also reports temperature humidity and light intensity of the outdoor monitoring area. Similarly, an urban CO2 monitoring system presented by author. The system operates outdoor at an urban area around 100 square kilometres.

Kartik Gupta, Pragati Jagdale, Reet Agarwal, Rishabh Saraswat, Hanmant Magar," With the growing number of individuals and vehicles within the populated area"

Traffic jam has become a serious problem and a challenge in big cities. Slow cars not only drive trips, but even have an impression on the environment by polluting the air, the economy by wasting working hours and fuel, and private health by increasing the extent of stress. It also can be life-threatening when emergency vehicles attempt to undergo traffic jams.

of the physical international than your private laptop. it's far an opensource bodily computing stage based on smooth microcontroller board, and the improvement putting for writing software program on the board.

Arduino is used to develop interactive gadgets, taking inputs from several switches or sensors, and dominant a variety of lighting stuffs, motors, and special physical outputs. Arduino projects may be stand-on my own, or they'll communicate using software package running for your pc The boards are assembled through hand or bought prefabricated; the open-supply IDE is downloaded free.



IR SENSOR

The IR sensing element module consists principally of the IR Transmitter and Receiver, Op-amp, rheostat (Trimmer pot), output junction rectifier at the side of few resistors.

- Two strips of pyroelectrical material (a pyroelectrical sensor)
- An infrared filter (that blocks out all alternative wavelengths of light)
- A lens (which collects lights from several angles into one point)
- A housing unit (to shield the device from alternative environmental variables, like humidity)

DTH SENSOR

The DHT11 may be a basic, radical low-priced digital temperature and wetness sensing element. It uses an electrical phenomenon wetness sensing element and a semiconductor device to live the encompassing air and spits out a digital signal on the info pin (no analog input pins needed). It's easy to use, however requires careful temporal order to grab information.

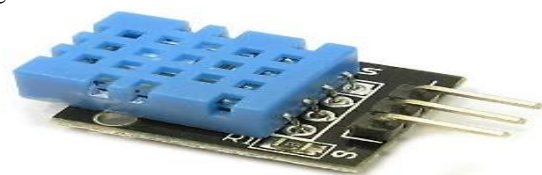


Fig.3: DTH sensor.

III.BLOCK DIAGRAM

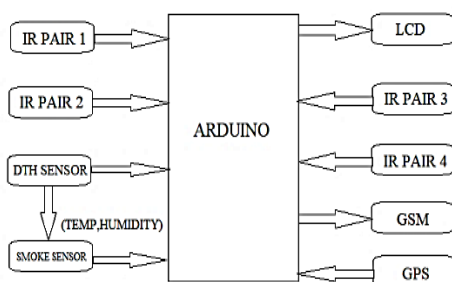


Fig.1:Block Diagram



Fig.2:Arduino

ARDUINO

Arduino could be a device for making laptop structures that can feel and manipulate a whole lot

SMOKE SENSOR

Sensors are the electronic devices used for interaction with the outer surroundings. There are varied styles of sensors out there that may discover lightweight, noise, smoke, proximity etc... With the appearance in technology, these are out there as each analog and digital forms. Besides forming a communication with the outer surroundings, sensors also are an important part of safety systems. Hearth sensors are wont to discover the fireplace and take acceptable precautions on time. For sleek functioning of management systems and sensitive physical science, wetness sensors are used for maintaining wetness within the unit. One amongst such detector utilized in safety systems to discover harmful gases is MQ2 Gas detector. It finds gasses like LPG, propane, methane, hydrogen, alcohol, gases within the smoke and CO Range up to 100000ppm.



Fig.4: Smoke sensor.

GSM

A GSM modem exposes an interface that allows programs now presently SMS to ship and get hold of messages over the modem interface. The cellular operator costs for this message sending and receiving as though it honestly turned into achieved at once on a cellular cell phone. To perform these duties, a GSM modem must aid accomplice “extended AT command set” for sending/receiving SMS messages. GSM modems will be a fast and inexpensive way to get started with SMS, due to a special subscription to an SMS carrier dealer isn't wished. In maximum components of the globe, GSM modems are a rate effective answer for receiving SMS messages, due to the fact the sender is procuring the message shipping.

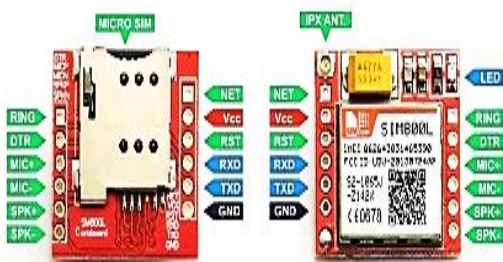


Fig.5: GSM.

GPS

The global Positioning gadget (GPS) is that the maximum vital recent strengthen in navigation and positioning generation. within the past, the stars were used for navigation. nowadays global wishes larger accuracy. the brand-new constellation of with radius up to the gap to the satellite. If 2 satellites are used, then the receiver must air the floor of every sphere, that is that the intersection of the 2 spheres or the perimeter of a circle. If a 3rd satellite tv for pc is hired, then the scenario of the user is narrowed proper right down to the 2 points wherever the three spheres cross. three measurements rectangular measure enough for land receivers because the decrease of the 2 factors could be selected. 4 satellites rectangular measure needed; the intersection of all 4 spheres is the receiver's location. as soon as over four satellites square degree used, bigger accuracy is often performed.

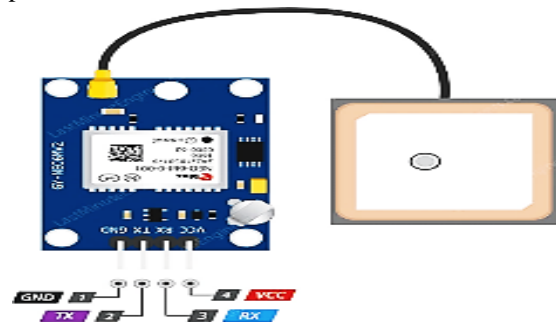


Fig.6:GPS.

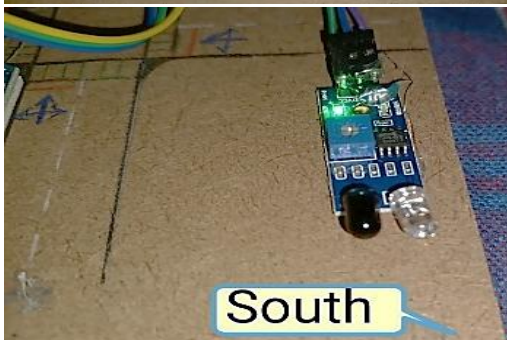
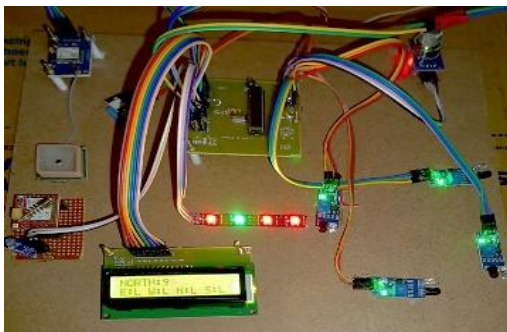
WORKING:

The block diagram of traffic light monitoring by using weather parameters and pollutants was consist of four IR pair sensors, Smoke sensor, Temperature sensor, Arduino, and GSM, GPS modules. Each module is connected to Arduino in different ports. The Arduino is as similar to microcontroller it gives output based upon what instructions we have given in program and will collect information from all modules such as it collect information from IR Sensor it takes 5 volts DC supply from Arduino and the output is given when any object is near to within range of IR sensor then LED will glow else LED will be in off position which says the amount of traffic present on four roads and Smoke Sensor will gather information about the level of pollutants such as carbon dioxide and carbon etc. The input of Smoke sensor is 5VDC and takes around 800mW the output of smoke sensor is that it finds concentration of carbon dioxide and other pollutant gasses range from 200 to 10000ppm. And

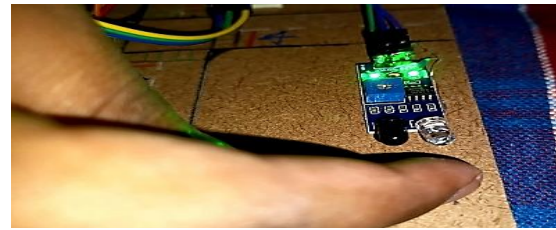
Temperature sensor will give information regarding temperature range in road .The input of temperature sensor is temperature, and that detected temperature may be displayed in form of voltage per degree Celsius (8 mV/°C).

GSM and GPS will give the updates of traffic via message. The GPS can track up location by the help of Satellites which are around 22 Satellites on 50 channels for this purpose GPS consumes 45mA and coming to GSM by GSM we can send SMS text message GSM requires 4v supply and for transmission of SMS it consumes 2000mA for peek transmission and for average transmission it consumes 350mA and along with-it GSM supports the frequencies of Quad Band like as 850, 950, 1800, 1900MHz. The input of These all modules are connected to the Arduino then it will do process for further steps like as it allots the traffic signals and also simultaneously it sends message to users about traffic in that area.

OUTPUT



When no Object is Detected.



When Object is Detected.



Updated Location

CONCLUSION

In this project, we discussed about the systematic traffic flow guidance by using meteorological factors. In general, the cost of Raspberry Pi is very high. Hence by using Arduino we done this project with low cost.

FUTURE SCOPE

The future scope of this project is, if we used Raspberry Pi instead of Arduino, we can be able to see the Digital image of that location. We linked to satellite through GPS and GSM modules we can be able to communicate for long distance and further we can also extend the range also.

REFERENCE

- [1] Stanly Wilson, Tony Manuel, Peter Augustin D, "Smart Pollution Monitoring System," International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-7, Issue-6, March 2019
- [2] R. Udaya Bharathi, M.Seshashayee, "Weather and Air Pollution realtime Monitoring System using Internet of Things," International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8 Issue-9, July 2019.
- [3] "Make: Getting Started with Raspberry Pi" by Matt Richardson, Shawn Wallace.
- [4] Gagan Parmar, Sagar Lakhani, Manju K. Chattopadhyay, "An IoT Based Low-Cost Air Pollution Monitoring System", Recent Innovations in Signal Processing and Embedded Systems RISE-20