SMART GARBAGE MONITORING SYSTEM USING INTERNET OF THINGS

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Abstract: Based on the conventional garbage monitoring in the urban and rural areas which is incompetent, several issues regarding bad odor and contamination of the environment were noticed. This can impact ecological life in a negative way. Considering these reasons, the "Smart Garbage Monitoring System using IoT" has been developed. Implementation of this IoT furnished system makes the scavengers' work productional and automatically reduces the adverse effects. In here a garbage bin is provided with sensors to detect the level of the waste and to sense a bad odor. The information of all these bins is monitored on a webpage, which is a task carried out by NodeMCU having a built-in Wi-Fi module on it. The data of the Ultrasonic sensor and the gas sensor are sent to NodeMCU along with GPS coordinates of the bin.

INTRODUCTION

The Internet of Things (IoT) refers to a network comprised of physical objects capable of gathering and sharing electronic information. The Internet of Things includes a wide variety of "smart" devices, from industrial machines that transmit data about the production process to sensors that track information about the human body. Often, these devices use internet protocol (IP), the same protocol that identifies computers over the world wide web and allows them to communicate with one another. The goal behind the internet of things is to have devices that self-report in real time, improving efficiency and bringing important information to the surface more quickly than a system depending on human intervention.

The Internet of Things promises to transform a wide range of fields like medicine, connected cars, smart grids, home automation etc. Another area that's also experiencing a transformation is urban planning. One of the main concerns with our environment has been solid waste management which impacts the health and environment of our society. The detection, monitoring and management of wastes is one of the primary problems of the present era. The traditional way of manually monitoring the wastes in waste bins is an incompetent process and utilizes more human effort, time and cost which can easily be avoided with our present technologies. This is our solution, a method in which waste management is automated. This is our Smart Garbage Monitoring System using IoT, an innovative way that will help to keep the civilization clean and healthy.

Existing System:

- This system uses ultrasonic sensor placed over the bins to calculate the garbage level and compares with threshold value.
- If the level crosses 70%, the Arduino collects the information and gives it to server through ESP8266 01 module. A Server is used to store data and shows of all dustbin levels on the web page.
- GSM used to send the text message to the mobile. Text message contains information about garbage level and location of a particular bin.

Proposed System:

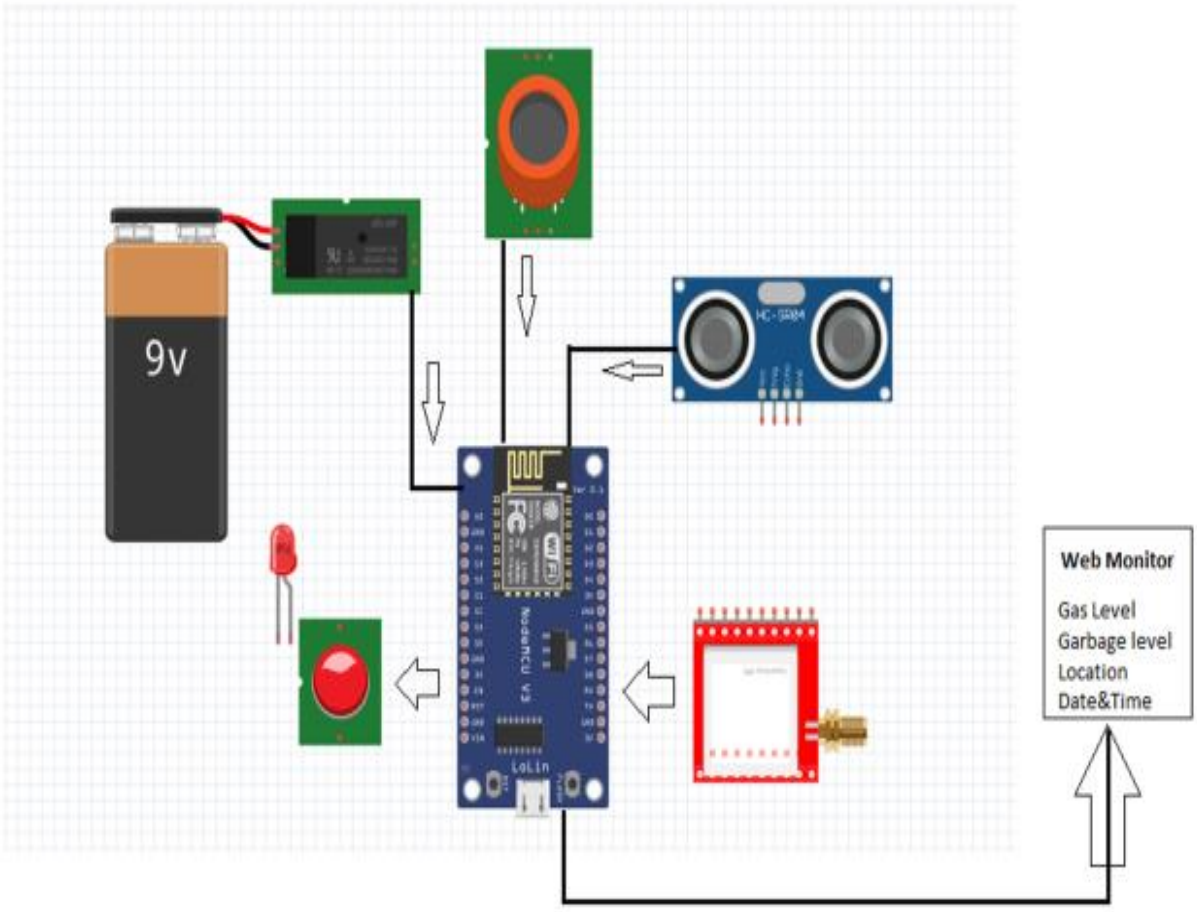
- This system uses ultrasonic sensor placed over the bins to calculate the garbage level and compares with threshold value.

- NodeMCU collects the information and gives it to server through inbuilt ESP8266 module. Server is used to transmit data, which is displayed on HTML-webpage.
- GPS is used to gets the location of the bin and sends to NodeMCU. NodeMCU sends information about garbage level, odor level and location of a bin.

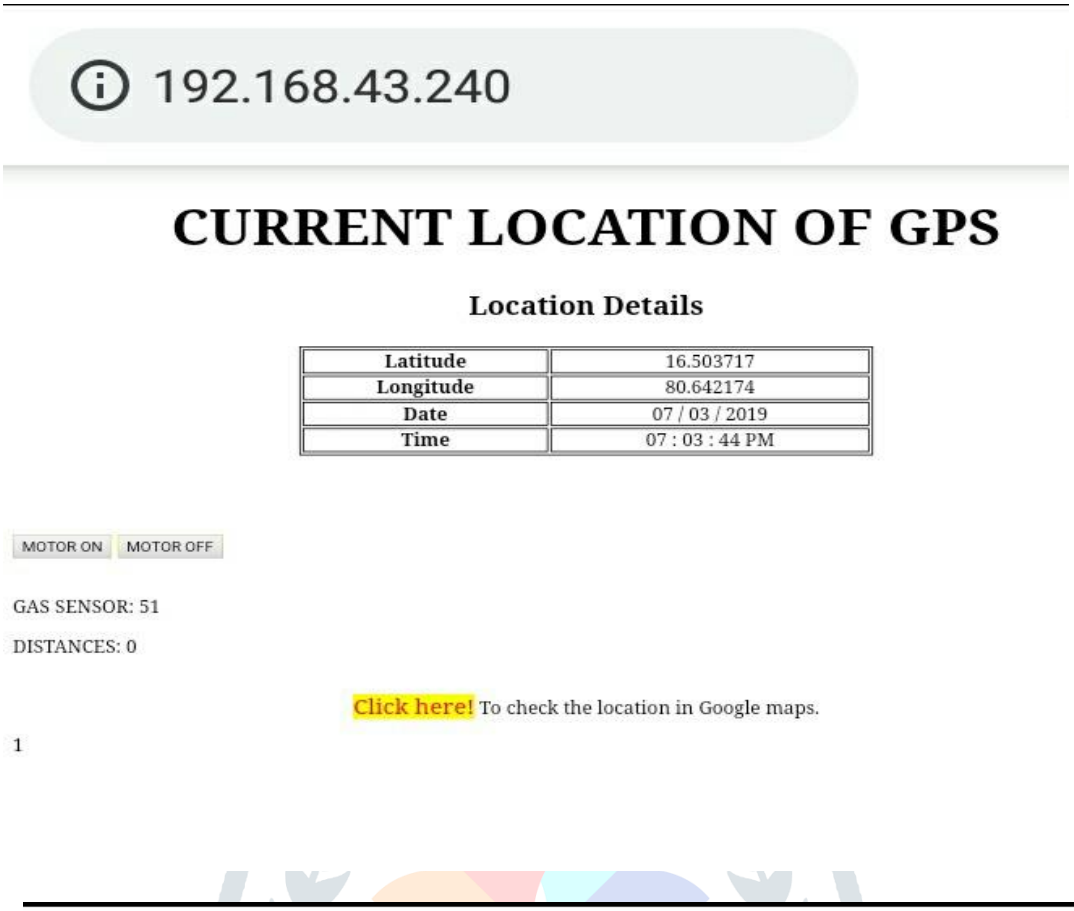
Extensions made:

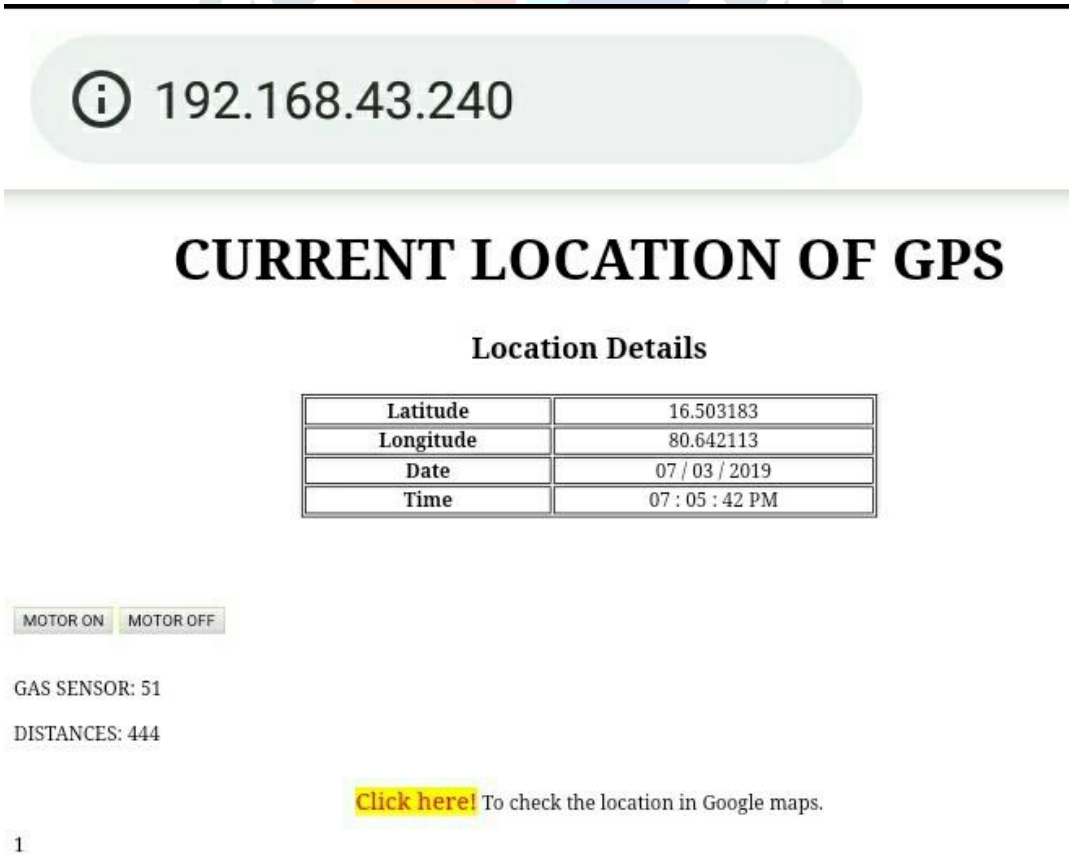
- Our system is an extension to the existing system which additionally senses the smell emitted by the organic matter.
- The garbage may not exceed the threshold limit but if it is left over, can emit bad smell this is sensed using gas sensors.
- We transmit this information to the server along with the GPS co-ordinates. Then it is displayed on the site prepared.

ARCHITECTURE DIAGRAM:



OUTPUTS:


192.168.43.240
CURRENT LOCATION OF GPS
Location Details
Latitude 16.503717
Longitude 80.642174
Date 07 / 03 / 2019
Time 07 : 03 : 44 PM
MOTOR ON
MOTOR OFF
GAS SENSOR: 51
DISTANCES: 0
Click here! To check the location in Google maps.
1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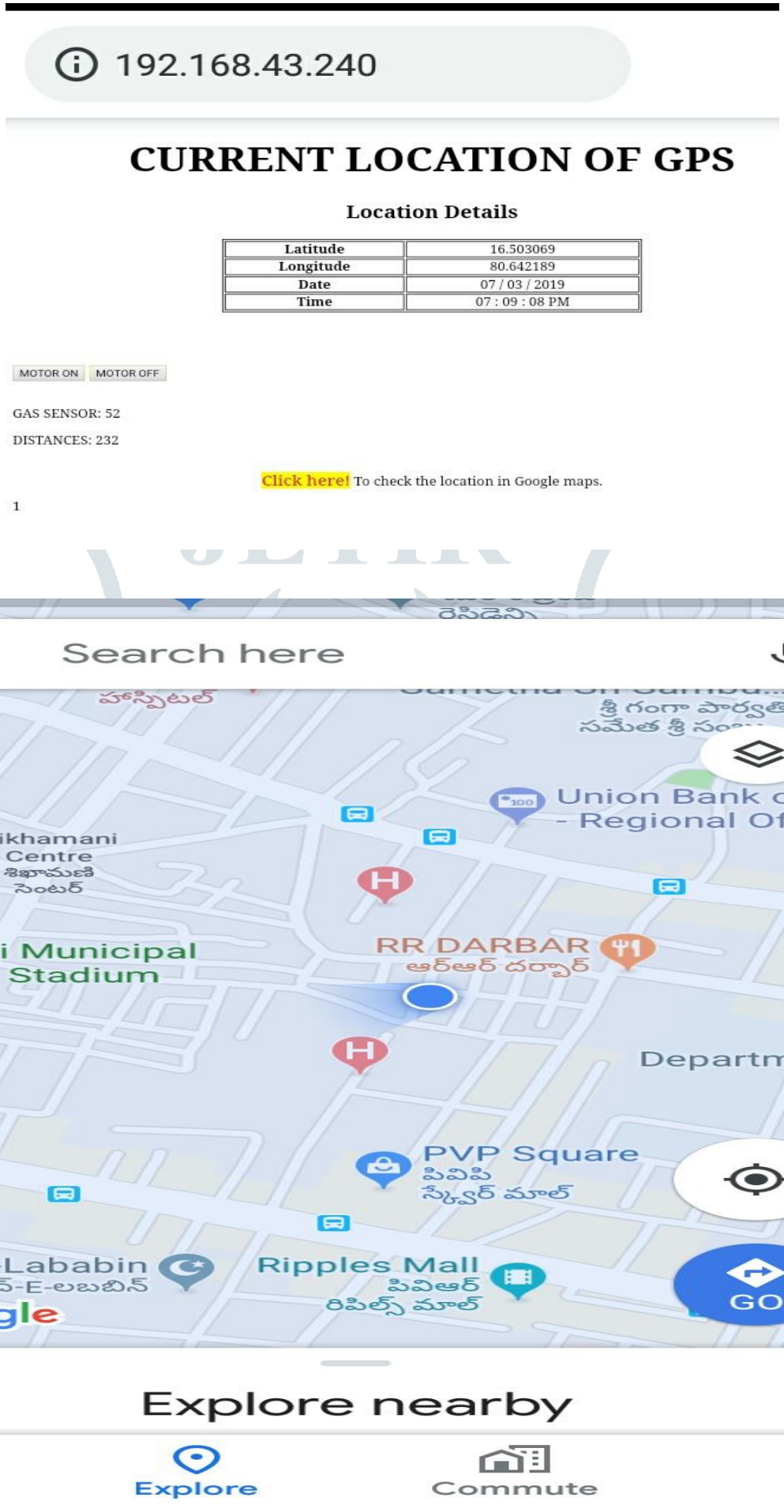
CURRENT LOCATION OF GPS
Location Details
Latitude 16.503183
Longitude 80.642113
Date 07 / 03 / 2019
Time 07 : 05 : 42 PM
MOTOR ON
MOTOR OFF
GAS SENSOR: 51
DISTANCES: 444
Click here! To check the location in Google maps.
1


192.168.43.240
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Location Details
Latitude 16.503069
Longitude 80.642189
Date 07 / 03 / 2019
Time 07 : 09 : 08 PM
MOTOR ON
MOTOR OFF
GAS SENSOR: 52
DISTANCES: 232
Click here! To check the location in Google maps.
1
Search here
Union Bank of Indi
- Regional Office
Sikhamani
Centre
RR DARBAR
PVP Square
Masjid-E-Lababin
Ripples Mall
GO
Google
Explore nearby
Explore
Commute

CONCLUSION:

WORK DONE:

- The **"**Smart Garbage Monitoring System Using IoT**"** was successfully designed and is tested for accuracy and quality.
- During this project we have accomplished all the objectives and this project meets the needs of an organization.
- The system can be used as a benchmark by the people who are willing to take one step further for increasing the cleanliness in their respected areas

GOALS:

- ✓ It reduces manual work
- ✓ Easy retrieval of information
- ✓ It helps our environment for keeping in hygienic conditions
- ✓ User friendly screens for easy operating
- ✓ Portable and flexible for further enhancement
- ✓ Web enabled

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