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Local Body Monitoring System for Sewage, Water storage and Garbage

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ABSTRACT: Recently, many methods and systems for automated monitoring has been evolving. In this project, we decided to acquire and analyse the obtained input from the Sensors and design an automated monitoring system for the Government Local Body like municipal and corporation, etc. We use java based web services and Design Interface for selecting the modules.

KEYWORDS: Level Monitoring, PH Monitoring, Turbidity Analysis, Position, Bio gas level.

I. INTRODUCTION

The Government Local Bodies are analysed and the processing modules are designed to automate these processes. The Java interface is designed initially and the modules are displayed. The modules present in the system are Water Level Monitoring, Sewage Level Monitoring, Garbage Level monitoring. From the selected modules the required sensors are selected and the processing is made. The Water Level Monitoring is used to automate the Government Water Tanks the Ultrasonic Sensor measure the height of the storage, IR Sensor is used to measure the Salinity/turbidity of water, PH Sensor is used to measure the PH level of the water, Level Sensor is used to measure the level of water storage. The Sewage Level Monitoring is used to automate the Underground Sewage System the Ultrasonic Sensor measure the height of the storage, Biogas Sensor is used to measure the gas level present in the given area. The Garbage Level Monitoring is used to automate the Government Dustbins the Ultrasonic Sensor measure the height of the Bin, Tilt Sensor is used to monitor the position of the Dustbin.

II. RELATED WORK

Based on the works on IoT service ecosystem for Smart Cities[1] they provides the requirements of automated smart cities and the features to be present from which we designed the project for automation of Local Body. The processing and waste generation methods are analysed in few references[2]-[9].

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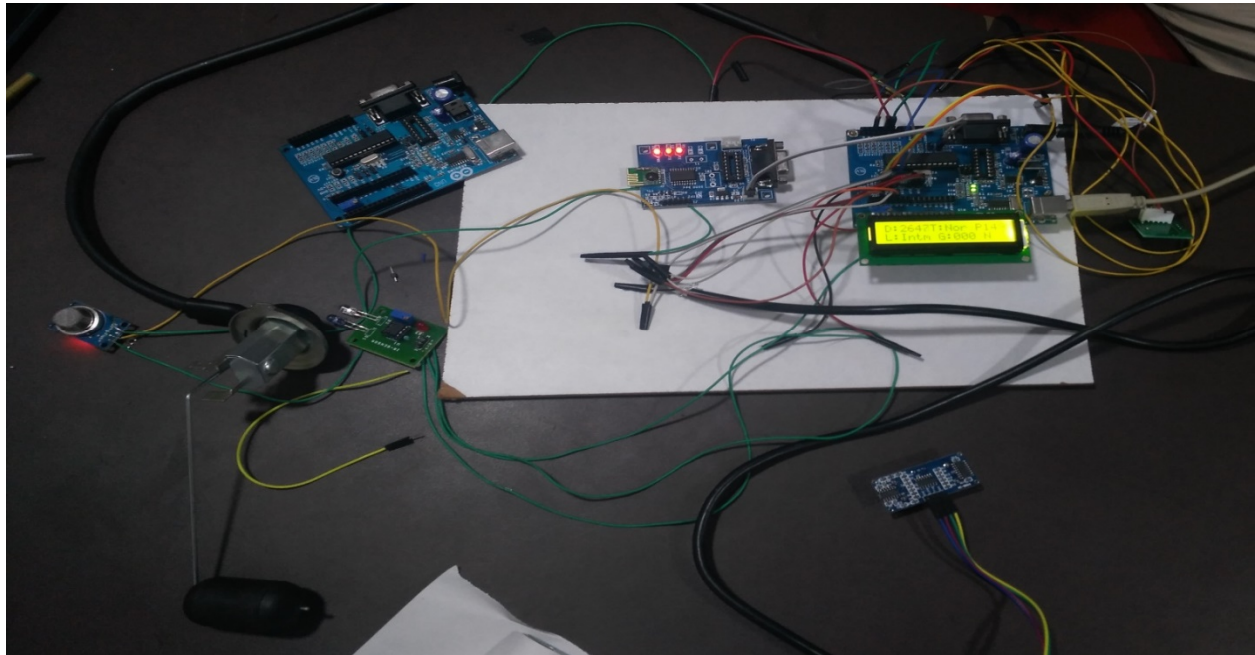


Figure2.1: Hardware Structure

III. EXISTING SYSTEM

Existing systems are highly manual in the working and they just used UltraSonic Sensors for measuring the height of the system and they are less cost efficient.

IV. PROPOSED SYSTEM

In our project, we propose the modules for the Local body monitoring and automation is used to automate the government local body(i.e: municipal and corporation) by monitor and notify the water level, sewage level and garbage level monitoring by ultrasonic depth monitoring, PH monitoring, turbidity/salinity monitoring, position monitoring, level of water, Bio gas level.

V. MATERIALS AND METHODS

1.SENSORS

Ultrasonic: Ultrasonic, which is used to detect the height of Water Level, Sewage Level, Dust Bin using the traversal of the ultrasonic waves reflected back from the sensor.



Figure5.1: Ultrasonic Sensor

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IR: IR is used to detect the turbidity and salinity of fresh water by using the refraction of IR radiation.

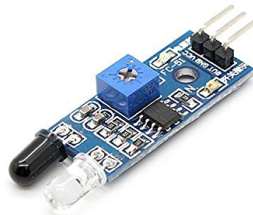


Figure5.2: IR Sensor

PH: PH Sensor is used to detect the PH level of water.



Figure5.3: PH Sensor

LEVEL SENSOR: The Water level in the Water storage Tank is found using this sensor.



Figure5.4: Level Sensor

BIOGAS SENSOR: The level of Methane, Ethane gas is found using this sensor from which Biogas level per area is calculated.



Figure5.5: Gas Sensor

TILT SENSOR: Using the x,y,z coordinates of the Bin position the fallen Dustbins are identified.



Figure5.6: Tilt Sensor

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II. PROGRAMMING MICROCONTROLLER

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet), UNO is the version of Arduino. It contains everything what needed to support the microcontroller, simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it doesn't use the FTDI USB-to-serial driver chip. Instead of this, it features the programmed as a USB-to-serial converter. Uno means one in Italian and another is named to mark the upcoming release of Arduino 1.0. The Uno & version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with previous versions, see the index of Arduino boards.



Figure 5.7: Arduino Uno

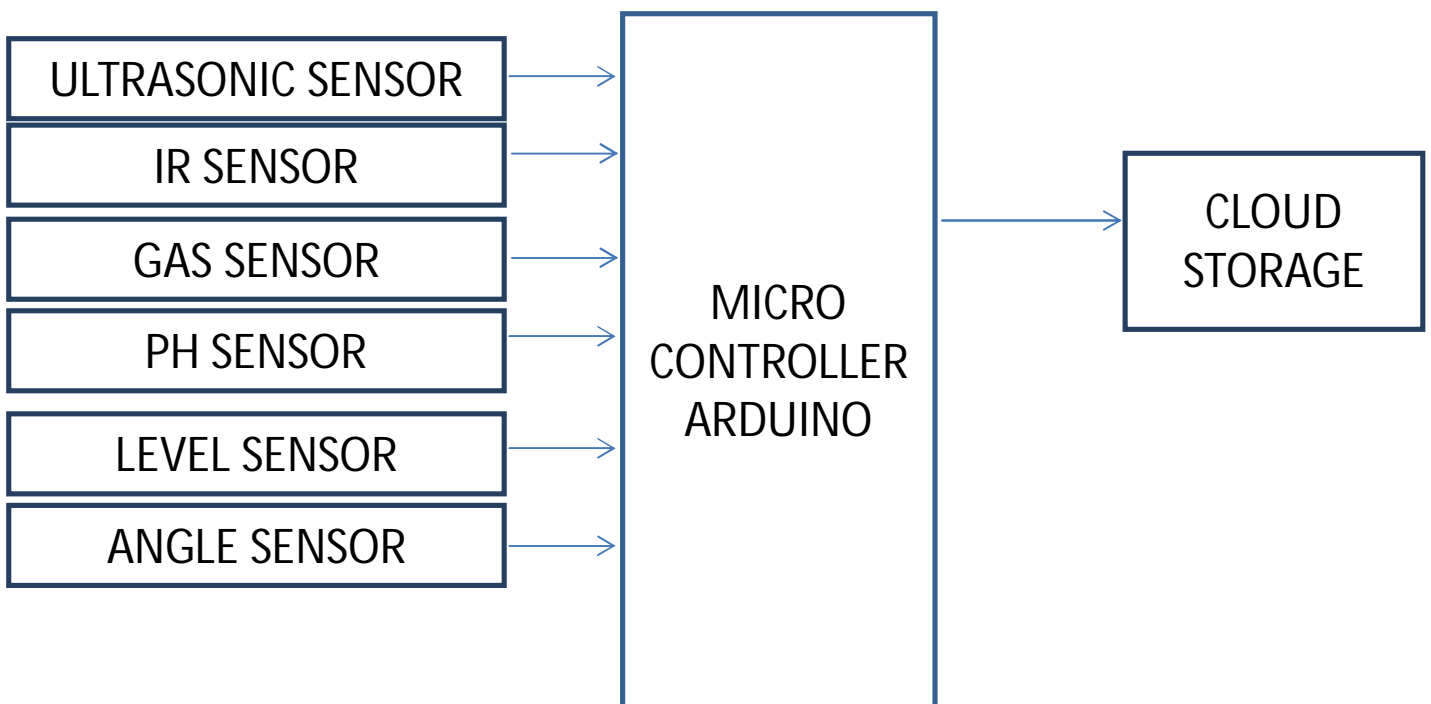


Figure 5.8: Architecture Diagram

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3.DATA COLLECTION :

The Data is collected from the Sensors connected in the respected ports of Arduino Uno and then processed based on the generated program and stored in Java interface Web Server.

4. MONITORING SYSTEM

Based on the selected monitoring system respected sensors are selected and the respective Water Level Storage, Sewage Level and Garbage level monitoring screens are displayed.

VI. RESULT

Fig 6.1 shows the result of the Local Body Monitoring by Automation System. When the modules are selected respected sensors are selected and the values are displayed in the cloud server. Then based on the values, monitoring is made.

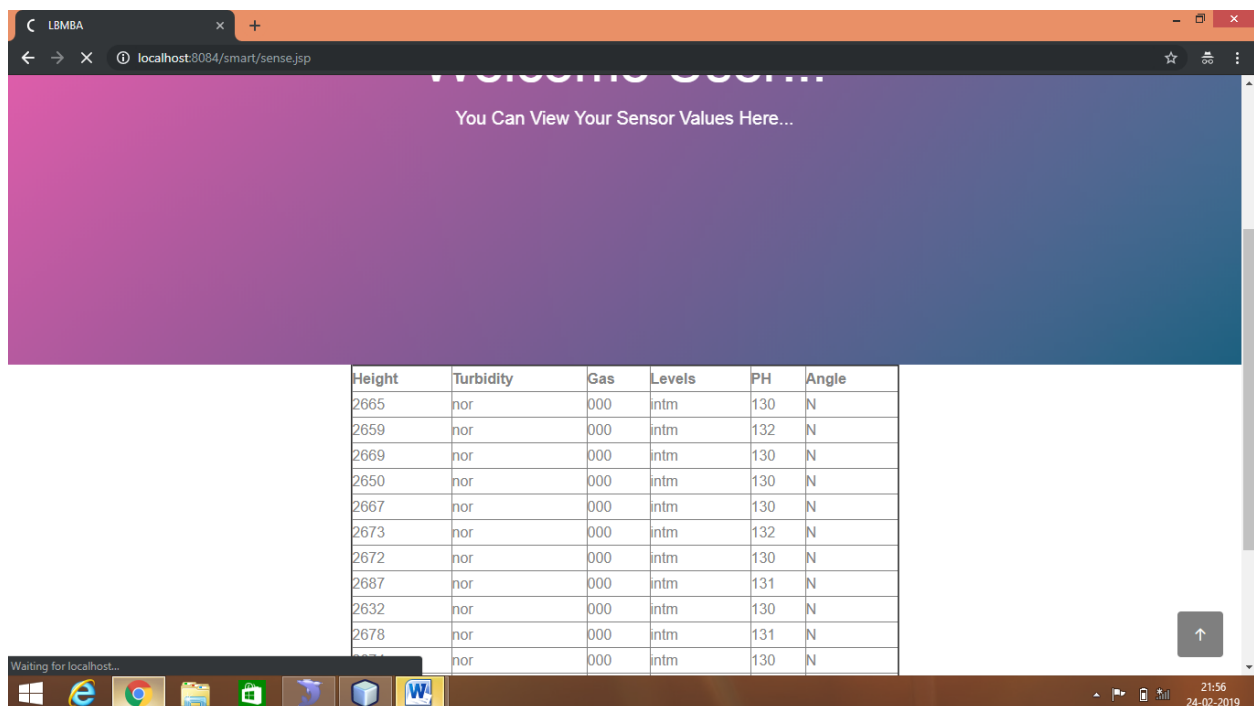


Fig 6.1: Final outcome of the Local Body Monitoring by Automation System

VII. CONCLUSION

In this paper we are recognizing values directly from Sensors. We obtain the values and data is collected using Sensors and the modules were designed for the processing of the values and the respected systems were executed.

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