

**“ADVANCED CITY FOR DESTINED SOCIETY”**

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**ABSTRACT:** There are various problems faced by the urban civilization due to improper managements and infrastructure. To overcome these problems here is solution to some of the problems, In this we are going to control street light power, Garbage dustbin overflow problem, Automatic watering to plants over the divider along the roads, Electrical equipment's control in government structures for saving energy, Parking vacancy available notifications, Parking Vacancy detection Density based traffic control, Sewer line blockage detection. These are some of the solutions provided to the certain problems. There can be some more plots over the whole concept. All the modules prescribed above will be developed on embedded platform using Arduino and other required peripheral devices with suitable model.

## **1. INTRODUCTION**

In current urban civilization many of them are undeveloped that's why the people living in that vicinity faces various problems, to overcome such problems by the means of technology here is a concept "smart city application for future ready society". Out of many problems here are the solutions to many such problems.

Garbage dustbin overflow problem IOT Garbage Monitoring system is a very innovative system which will help to keep the cities clean. This system monitors the garbage bins and informs about the level of garbage collected in the garbage bins via a web page. For this the system uses ultrasonic sensors placed over the bins to detect the garbage level and compare it with the garbage bins depth.

Control the street light using RTC. Thus the manual switching operation is completely eliminated. This project provides different on and off timings to operate the lights. The user can once program these timings according to his requirements. There will be online detection whether the power supply reached to the light and if power supply is there at light terminals then is light on, if there is any fault in any section there will be acknowledgement to the respective department.

We had the sewage flood in the city because of a plastic bag which blocked the city sewage lanes behind our house. To prevent this situation we need to monitor the sewer lanes, this system warns the respective department well in advance (however much possible) about the blocked sewer

lanes. Most of the times, many of us forget to switch off the lights while leaving the room in which we stay most of the time. This results in unnecessary power wastage. Which usually occurs in government infrastructures therefore, an automatic room-light controller automatically turns on the lights when a person enters into a room, and turns off the lights when the person leaves the room. This automatic room controller can be implemented by using a simple microcontroller and wireless IR technologies.

In Density Based traffic control system, we will use PIR sensors to measure the traffic density. We have to arrange one PIR sensor for each road; these sensors always sense the traffic on that particular road. All these sensors are interfaced to the microcontroller. Based on density signal the control timer can be adjusted.

Based on particular time over the day the watering to the plants planted over the roadside dividers can be implemented there is no need to manually water the plants. It will help to prevent the wastage of water and plants. All of the above mentioned modules will be implemented over a single platform and constructed.

Parking slots is serious problem in many undeveloped cities to overcome this we have introduced parking vacancy detection system in parking places. It will acknowledge the driver of the vehicles about vacancy in the parking at the entrance only.

## **2. LITERATURE REVIEW**

In past years work on all above mentioned topics research has been done and in some amount implemented also but now this time we need to improve this and add on some advance technology to reduce the human efforts. So, the research of previous we discuss in this section. Research aims to design and make AGATOR (Automatic Garbage Collector), a rotor robot model as automatic garbage collector to counter accumulation of garbage in the river which has no flow effectively and efficiently. The method of implementation is design and construction. This method includes the identification of needs, analysis of the components required specifically, hardware and software engineering, developing, and testing. The test results obtain data by specification of AGATOR includes IC ATmega16 and Support devices of the robot are mechanical robot, robot control system, sensor system, and actuator robot. The maximum load drives the garbage receptacle until 5 kg. The average speed of robot when take out the garbage is 0.26m/s.

Next is for plants on road divider up till now there is no any drastic change in the process of supplying water nor use any technology for this process. Only pipe lines of small diameter placed on dividers and operator can turn on the tab and off it sometimes water gates overflow from divider, there is no provision for saving water. Same for SEWER LINE detection also.

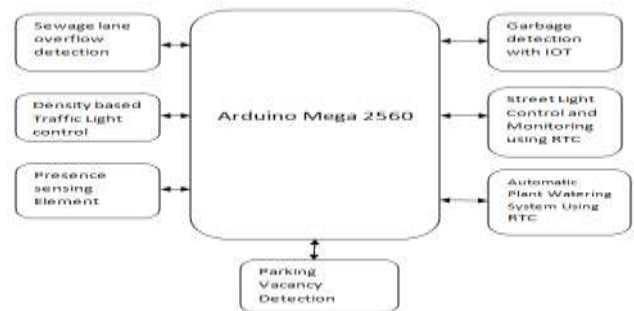
When someone entre a room, as a habitual tendency, we often search for a switch to turn the light on, and if we are new to the room, we often find it difficult to locate the switch. Most of the times, many of us forget to switch off the lights while leaving the room in which we stay most of the time. This results in unnecessary power wastage. This usually occurs in government infrastructures. Therefore, an automatic room-light controller automatically turns on the lights when a person enters into a room, and turns off the lights when the person leaves the room. This automatic room controller can be implemented by using a simple microcontroller and IR technologies.

This application is used to control the street light using RTC. Thus the manual switching operation is completely eliminated. This project provides different on and off timings to operate the lights. The user can once program these timings according to his requirements. This system switches on the lights only at preprogrammed timings. As the Real Time Clock chip with battery back-up is used, there will be no disturbances for the programmed on/off timings even in power failures.

In this system, we will use IR sensors to measure the traffic density. We have to arrange one IR sensor for each road; these sensors always sense the traffic on that particular road. All these sensors are interfaced to the microcontroller. Based on density signal the control timer can be adjusted.

### 3. HARDWARE DESCRIPTION

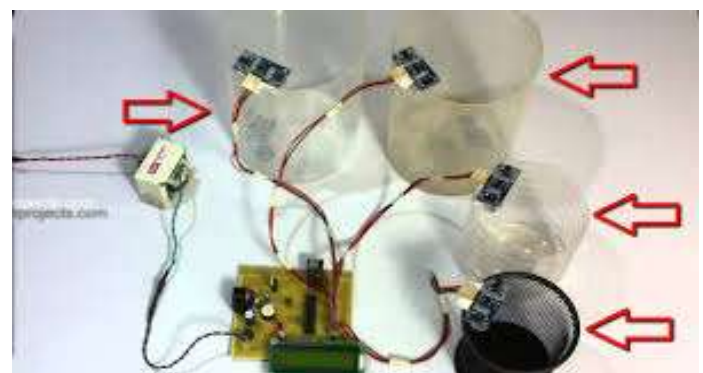
The Problems Solutions Associated with smart city are developed using technology are given below with brief description we will see it one by one.



### 4. IOT BASED GARBAGE MONITORING SYSTEM



As Fig:3.2.1 Shows garbage dustbin overflow problem To Overcome this we decided to implement This project IOT Garbage Monitoring system is a very innovative system which will help to keep the cities clean. This system monitors the garbage bins and informs about the level of garbage collected in the garbage bins via a web page.

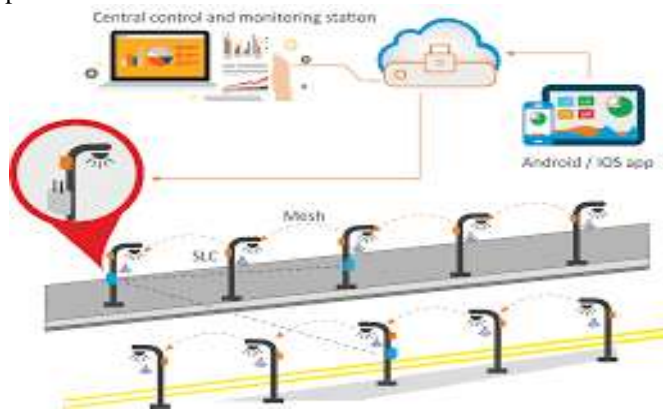


As shown in Fig: 3.2.2 The Garbage Monitoring System will look like that. Ultrasonic sensors are used to detect the height of the garbage bins the ultrasonic sensor is interfaced with Arduino to get the readings and according to

this reading the arduino transmits the data to the web page as shown in Fig: 3.2.3 using Wi-Fi.

### 5. STREET LIGHT CONTROL AND MONITORING USING RTC

This application is used to control the street light using RTC (IC DS1307). Thus the manual switching operation is completely eliminated. This project provides different on and off timings to operate the lights. The user can once program these timings according to his requirements. This system switches on the lights only at preprogrammed timings. As the Real Time Clock chip with battery back-up is used, there will be no disturbances for the programmed on/off timings even in power failures.



### 6. AUTOMATIC PLANT WATERING SYSTEM USING RTC

As we have seen the along the divider over the road dies due to insufficient water supply to them and improper management. On the other hand the water given to plants is more than requirement which gets overflowed by the means of technology we can save the water and grown up the plants. Based on particular time over the day the watering to the plants planted over the roadside dividers can be implemented there is no need to manually water the plants.

Using RTC IC DS1307 we can scheduled the watering time the water supply connected to the pipe will be turn on and off using Solenoid valve as per the scheduled. As whole thing will be automatic no need any personals to take care.



### 7. SEWAGE LANE OVERFLOWS DETECTION

We had the city sewage flood in the city because of a plastic bag which blocked the city sewage pipes below our house. To prevent this situation we need to monitor the sewer line this system forewarns the respective department well in advance (however much possible) of a blocked pipe in the city sewage pipes. To implement this Hook an arduino up to an ultrasonic sensor. Put the sensor under the manhole of the city sewer. Hook some sort of transmitter up to the sensor, which would transmit the distances in the city sewage. Program in parameters that if the distance grows or shrinks to a certain point meaning there is no flow of water, or there is an overflow of water than it alerts respective department of the situation.



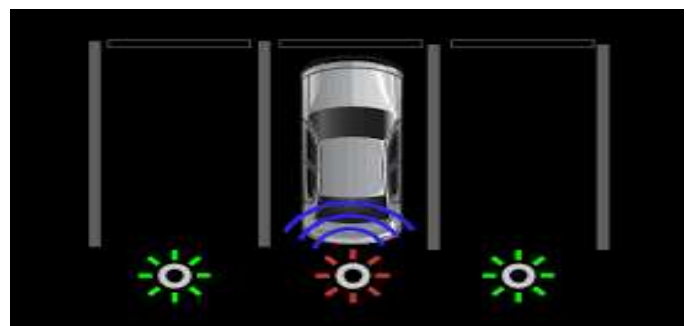
### 8. DENSITY BASED TRAFFIC LIGHT CONTROL

Nowadays, controlling the traffic becomes major issue because of rapid increase in automobiles and also because of large time delays between traffic lights.

So, in order to rectify this problem, we will go for density based traffic lights system.

### 9. PARKING VACANCY DETECTION

Parking slots is serious problem in many undeveloped cities to overcome this we have introduced parking vacancy detection system in parking places. It will acknowledge the driver of the vehicles about vacancy in the parking at the entrance only



## **10. PRESENCE SENSING ROOM EQUIPMENT CONTROL**

When we enter a room, as a habitual tendency, we often search for a switch to turn the light on, and if we are new to the room, we often find it difficult to locate the switch. Most of the times, many of us forget to switch off the lights while leaving the room in which we stay most of the time. This results in unnecessary power wastage. This usually occurs in government infrastructures. Therefore, an automatic room-light controller automatically turns on the lights when a person enters into a room, and turns off the lights when the person leaves the room. This automatic room controller can be implemented by using a simple microcontroller and wireless IR technologies.

## **11. ADVANTAGES**

- Helps in keeping City Clean by Continuous Monitoring.
- Avoid the Blockage of Traffic over the Squares in cities.
- Save Water And Plants Keeping City Eco Friendly.
- Avoid the Wastage of Electricity By turning on street lights when required only.
- Saves the electricity by the controlling the electrical equipments when required only.
- Reduces the Illegal Vehicle parking's by showing the parking vacancy.
- Makes the city sanitation Clean by Avoiding Blockages in sewer lanes.

## **12. FUTURE EXPANSION**

Using GPS we can track the garbage bin collecting vehicles send them signal when bin becomes overflows. In future work Raspberry pi microcontroller can be used which will directly integrate the opencv software there is no need to install the opencv in the system. With the help of raspberry pi we can provide the view of the traffic to the traffic controller room so that the green signal will be provided for the longer time in the required area during the signal in order to avoid the unnecessary waiting time during the signal

## **13. CONCLUSION**

By implementing this project we will avoid overflowing of garbage from the container in residential area which is previously either loaded manually or with the help of loaders in traditional trucks. Manual loading takes time and reduces the productivity of the vehicles and manpower deployed. Besides, manual handling of waste poses a threat to the health of the sanitation workers as the waste is highly contaminated. It can automatically monitor the street lighting equipment's (Lamps and controllers)

The project may be very well used in where the traffic signals is kept and in many other places where we need to full fill the need of the automation. In the future we implement the project's idea in the industries. By using this project in future we can know traffic density in the city and so that remedies can be made according to that. We can calculate the density of the vehicle by using mat lab tool by comparing the four side of the image which is given as input. We can simulate the result of the four given input image but this cannot be used in real time applications as it is very slow and the software is not free of cost like opencv to overcome this disadvantage of mat lab, opencv software is used which is very easy to install and is open source software and can be used in real time application in a quick manner. In this paper we have shown the density measurement in the signal by using opencv in the System.

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## 15. AUTHOR PROFILE

A portrait photograph of Shubham R. Dhoke, a young man with dark hair, wearing a light-colored shirt and a grey jacket, looking directly at the camera.	<b>Shubham R. Dhoke</b> Pursuing the Bachelor of Engineering in Electronics and Telecommunication from Prof Ram Meghe college of Engineering and Management Amravati, India.
A portrait photograph of Akash S. Gulhane, a young man with dark hair, wearing a light-colored shirt and a grey jacket, looking directly at the camera.	<b>Akash S. Gulhane</b> Pursuing the Bachelor of Engineering in Electronics and Telecommunication from Prof Ram Meghe college of Engineering and Management Amravati, India.
A portrait photograph of Mandavi N. Chaporkar, a young woman with dark hair, wearing a light-colored shirt and a grey jacket, looking directly at the camera.	<b>Mandavi N. Chaporkar</b> Pursuing the Bachelor of Engineering in Electronics and Telecommunication from Prof Ram Meghe college of Engineering and Management Amravati, India.