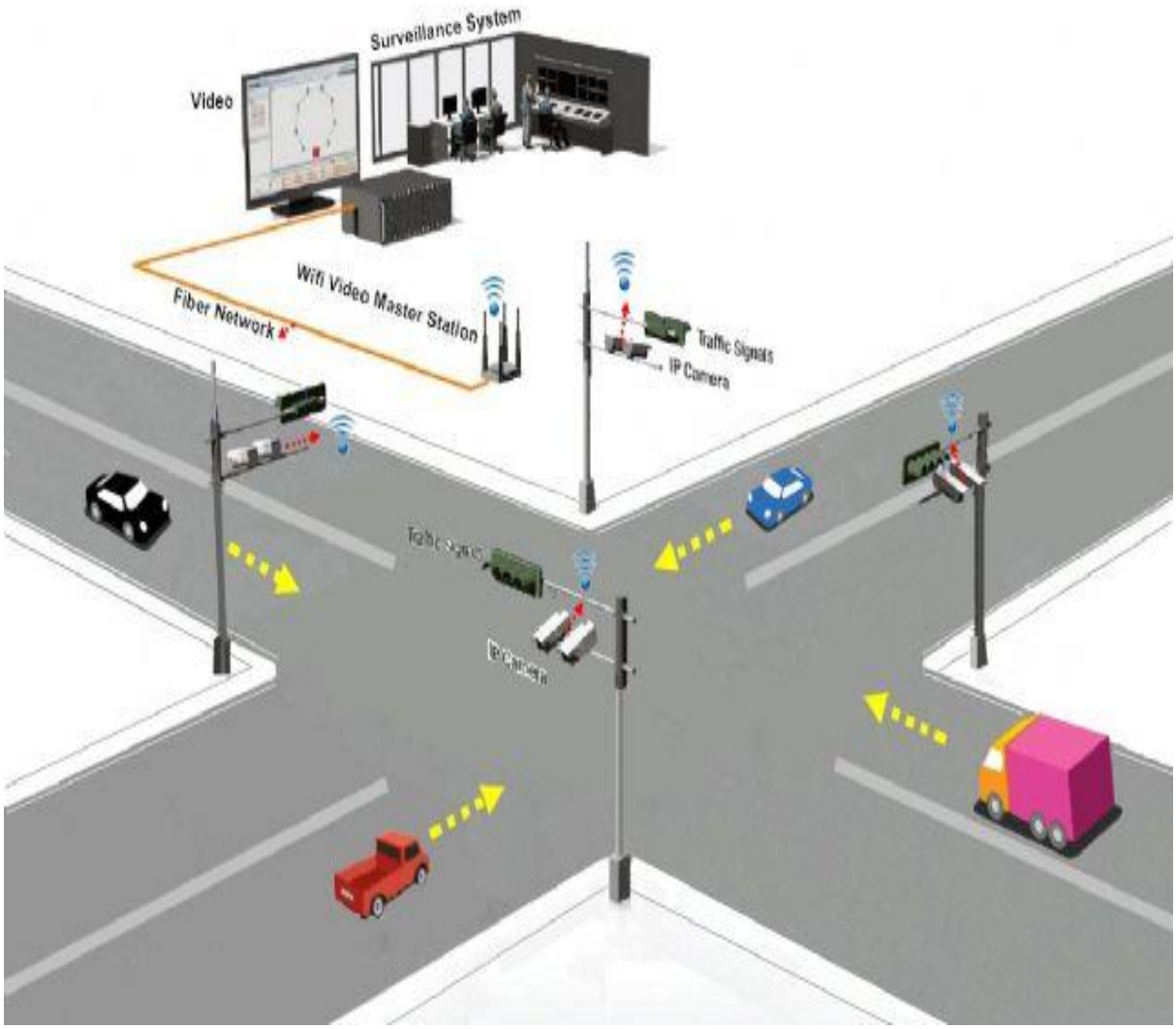
# PROJECT OVERVIEW AND DESIGN

## TRAFFIC MANAGEMENT SYSTEM



# TEAM DETAILS

| | |
|---|---|
| Mentor: | Mrs.M.Maheswari |
| Leader: | Keerthika M |
| Members: | Abinaya M<br>Deepa R<br>Divya K<br>Mahalakshmi R |
| Problem Description | The Project involves using IOT device and data analaytics to monitor traffic flow and congestion in real time,providing commuters with acces to this information through a public platform or mobile apps. |
| Goals | ❖ No traffic jam<br>❖ More secure<br>❖ Less pollution |

# OBJECTIVES

- To Reduce traffic jams and accidents on the streets
- To Ensure immediate clearance for emergency vehicles
- To Facilite safer and shorter commute times
- To Reduce congestion & energy consumption at intersections
- To Offer significant productivity benefits with real-time monitoring of crucial infrastructures
- To Reduce operating costs with efficient traffic management processes
- To Ensure compliance with the regulations for reducing the carbon footprint
- To Save billions of gallons of fuel wasted every year
- To Accurate tracking & quick recovery of lost and stolen vehicle

# INTRODUCTION

The sustainability and smartness of the smart city concept rely on the technologies adopted to improve the people's quality of life. The smart city governance is one significant aspect of smart city initiatives, which will facilitate the planning techniques for better decision making .

Smart traffic infrastructure is an essential component of smart city initiatives because traffic congestion is a severe issue that grows along with city development.

Smart traffic management includes intelligent transport systems with integrated components like adaptive traffic signal controls, freeway management, emergency management services, and roadside units .Such systems collect real-time traffic data and take necessary measures to avoid or minimize any social issue created as part road congestion.

The widely used mobile applications like Google Maps or Apple Maps accurately predict traffic congestion for urban roads based on the sensor data from monitoring devices installed on highways or urban roads.These application providers establish partnerships with various transportation entities to gather traffic information.

# ABSTRACT

A significant amount of research work carried out on traffic management systems, but intelligent traffic monitoring is still an active research topic due to the emerging technologies.such as the Internet of Things (IoT) .

The integration of these technologies will facilitate the techniques for better decision making and achieve urban growth. However, the existing traffic prediction methods mostly dedicated to highway and urban traffic management, and limited studies focused on collector roads and closed campuses.

Besides, reaching out to the public, and establishing active connections to assist them in decision-making is challenging when the users are not equipped with any smart devices. This research proposes an IoT based system model to collect, process, and store real-time traffic data for such a scenario.

The objective is to provide real-time traffic updates on traffic congestion and unusual traffic incidents
through roadside message units and thereby improve mobility.

These early-warning messages will help citizens to save their time, especially during peak hours. Also, the system broadcasts the traffic updates from the administrative authorities. A prototype is implemented to evaluate the feasibility of the model, and the results of the experiments show good accuracy in vehicle detection and a low relative error in road occupancy estimation.

# IoT in Traffic Management

Traffic management is one of the biggest infrastructure hurdles faced by developing countries today. Developed countries and smart cities are already using IoT and to their advantage to minimize issues related to traffic. The culture of the car has been cultivated speedily among people in all types of nations. In most cities, it is common for people to prefer riding their own vehicles no matter how good or bad the public transportation is or considering how much time and money is it going to take for them to reach their destination.

# REQUIREMENTS

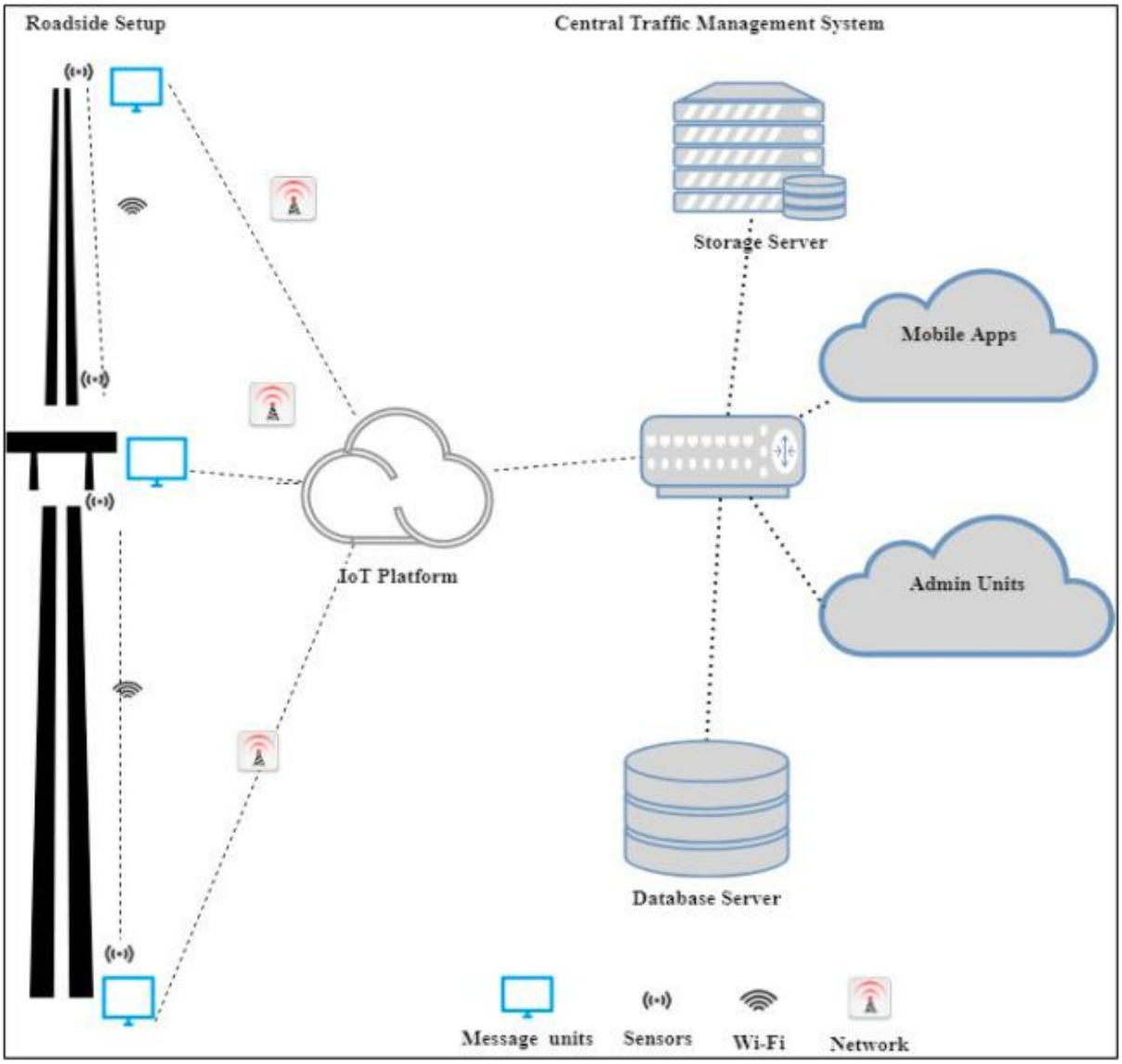
## Hardware Components

- Microcontroller (Arduino Mega 2560).
- Microcontroller (Arduino Uno ).
- LEDs.
- IR Sensor.
- Jumper Wires.

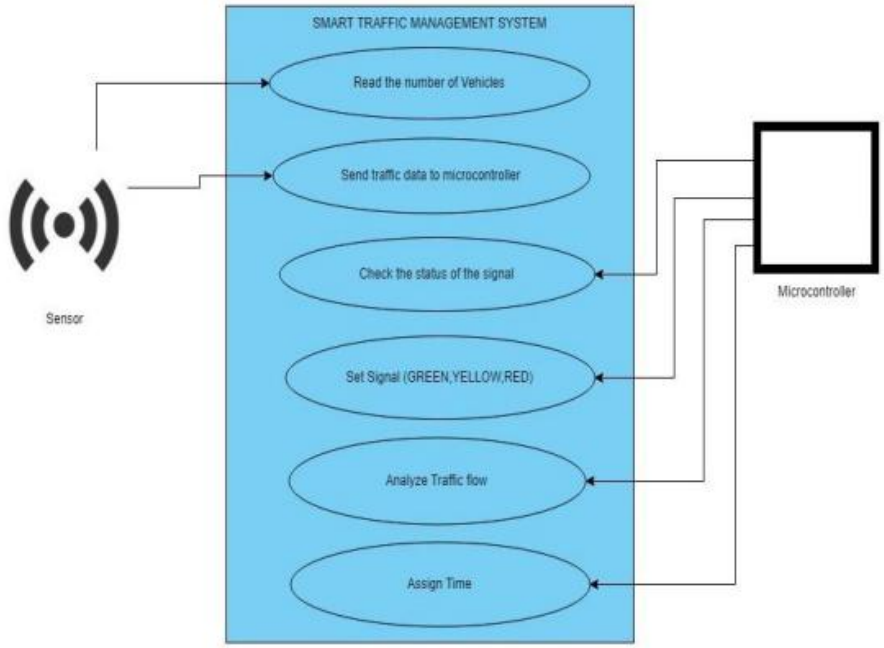
## Software Requirement

- Arduino IDE
- Proteus Design Suite

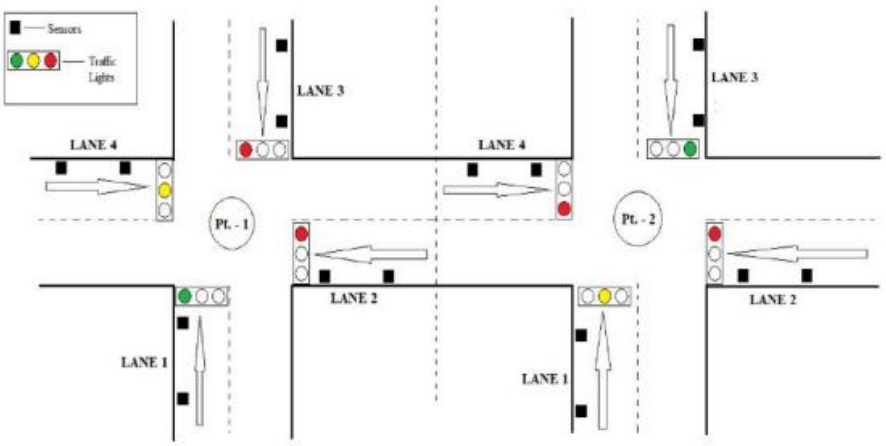
# BLOCK DESIGN



# USE CASE DIAGRAM




# A View of Signals at Different Lanes



# Conclusion

- Smart Traffic Management System has been developed by using multiple features of hardware components in IoT. Traffic optimization is achieved using IoT platform for efficient utilizing allocating varying time to all traffic signal according to available vehicles count in road path.
- Smart Traffic Management System is implemented to deal efficiently with problem of congestion and perform re-routing at intersections on a road. This research presents an effective solution for rapid growth of traffic flow particularly in big cities which is increasing day by day and traditional systems have some limitations as they fail to manage current traffic effectively.
- Keeping in view the state of the art approach for traffic management systems, a smart traffic management system is proposed to control road traffic situations more efficiently and effectively.
- It changes the signal timing intelligently according to traffic density on the particular roadside and regulates traffic flow by communicating with local server more effectively than ever before.
- The decentralized approach makes it optimized and effective as the system works even if a local server or centralized server has crashed.