GNANAMANI COLLEGE OF TECHNOLOGY

DEPARTMENT: BIO MEDICAL ENGINEERING

YEAR: THIRD YEAR

TOPIC: TRAFFIC MANAGEMENT

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TRAFFIC MANAGEMENT

INTRODUCTION

Traffic congestion is a major problem in many urban cases, causing delays, pollution and accidents . To address this issues ,we propose an IOT project using arduino for Traffic management . The main objectives of this project is to design and implement a small traffic light system that can monitor and control traffic flow at intersections using sensors , wifi modules and LEDs . This system can provide real time and data manual override capabilities through a cloud based platform .

PROBLEM

In addition to an increase in accident frequency unjustified traffic signal can also cause excessive delays, disobedience of signals and division of traffic to inadequate alternate rautes.

SOLUTION

- **Objective of this program is to design and implement a smart traffic light system that can monitor and control traffic flow at intersections using sensors wi-fi modulus and LED'S.**
- **The system can also provide real-timr data and manual override capabilities through a could-based platform.**

COMPONENTS

- **ARDUINO BOARD**

  This is the microcontroller that acts as the system . It collects data from the trffic density sensors and send commands to the signal LED'S .

- **TRAFFIC DENSITY SENSORS**

These are device that measure the no.of vechicles passing through each lane .They can be infrared sensors , ultrasonic sensors or pressure sensors .

- **WIFI MODULE**

This is a devices that enables wireless communications between the arduino board and the cloud platform .

- **SIGNAL LED'S**

These are red , yellow and green lights that indicate the status of each lane . They are controlled by the arduino board according to the traffic density data.

- **CLOULD PLATFORM**

This is an online service that providers a graphical users interface (GUI) for monitoring and controlling the system .

HARDWARE COMPONENTS

- **Arduino Board**
- **Traffic Density Sensors**
- **Wi-fi modules**
- **Signal LED'S**
- **Power supply**

SOFTWARE COMPONENTS

- **Arduino IDE**
- **IOT Platform**
- **Programming Languages (C or C++)**

BENEFITS OF THIS PROJECT

- **It improve traffic efficiency by reducing waiting time and fuel consumption .**
- **It reduce traffic accidents by preventing collisions and conflicts .**
- **It is energy – efficient and cost – effective .**
- **It provide real – time data and remote control capabilities for traffic management .**

THE SYSTEM WORK AS FOLLOWS

- **The traffic density sensors detect the number of vehicles in each lane and send this data to the arduino board via analog (or) digital inputs .**

IOT SOLUTION TO TRAFFIC CONGESTION

- **smart IOT traffic control solution – delivered**
- **Data processed locally in vehicles and transferred to and aggregated in the cloud .**
- **Processed data is then sent back with minimum delay to cars , driver's smartphones , and regional road operators traffic management centers as localized road safety messages**

IOT USED IN TRAFFIC MANAGEMENT

- **An INTERNET OF THINGS - IOT enabled intelligent trafffic management system can solve pertinent issues by leveranging technologies like wireless connectivity and intelligent sensors .**
- **Considered a cornerstone of a smart city , they help improve the comfort and safety of drivers , passengers pedestrians .**

IOT DEVICES EXAMPLE

- SMART MOBILES
- SMART REFRIGRATORS
- SMART WATCHES
- SMART FIRE ALARMS
- SMART DOOR LOCKS
- SMART BICYCLE
- MEDICAL SENSOR
- FITNESS TRACKERS
- SMART SECURITY SYSTEM

APPLICATION OF SMART TRAFFIC MANAGEMENT

- ENVIRONMENT IMPACT ASSESSMENT
- ELECTRONIC TOLL COLLECTION
- ANOMALY DETECTION
- ILLEGAL ACTIVITY IDENTIFICATION
- SECURITY MONITORING
- TRAFFIC SIGNAL MANAGEMENT SYSTEM

OUTPUT

The output of this project is a smart traffic management system that uses arduino and IOT to control the traffic lights at a four – way intersection . The system can also be monitored and controlled remotely using an online platform .