# TRAFFIC MANAGEMENT

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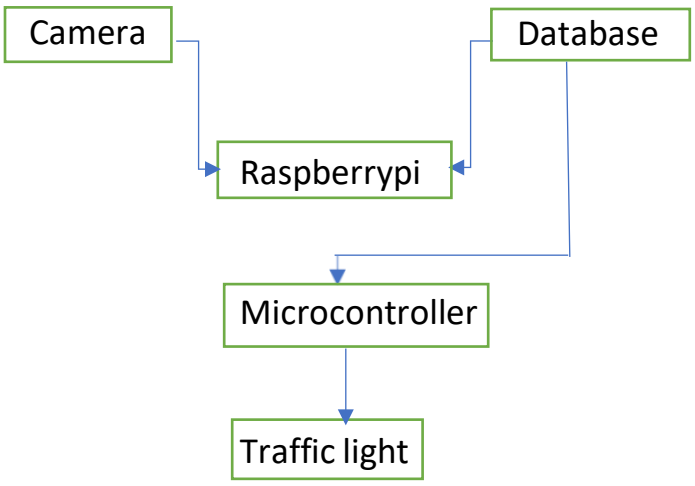
## INTRODUCTION:

- ✓ The Internet of Things refers to the network of interconnected devices and sensors that can collect and exchange data seamlessly.
- ✓ In the context of traffic management, IoT offers the potential to revolutionize how we monitor, control, and optimize traffic flow.
- ✓ By deploying sensors, cameras, and other IoT devices throughout urban areas, real-time traffic data can be collected and analyzed to make informed decisions that enhance the efficiency of transportation networks.
- ✓ This project aims to explore the possibilities of IoT in traffic management, with a focus on improving traffic flow, reducing congestion, and enhancing the overall urban mobility experience.

## SYSTEM DESIGN:

The architecture consists of six modules:

- Raspberry pi
- LED lights which are used for the purpose of signalling.
- Traffic cameras which are used for monitoring traffic.
- Node MCU Microcontroller.



## SYSTEM IMPLEMENTATION:

### Steps in the proposed system for controlling traffic light 1:

- ✓ Camera: Continuously record traffic video.
- ✓ Read Image: Read frames of the traffic image.
- ✓ Grayscale Image Conversion: It converts color image to grayscale image. This method is based on different color transforms. According to the R, G, B value in the image, it calculates the value of grayscales and converts the image into a grayscale image.
- ✓ Image Binarization: Grayscale image is converted into black and white image.
- ✓ Traffic Signal Control: Based on vehicle count signal timings are changed and the respective LED glows.

### Steps for controlling traffic light 2:

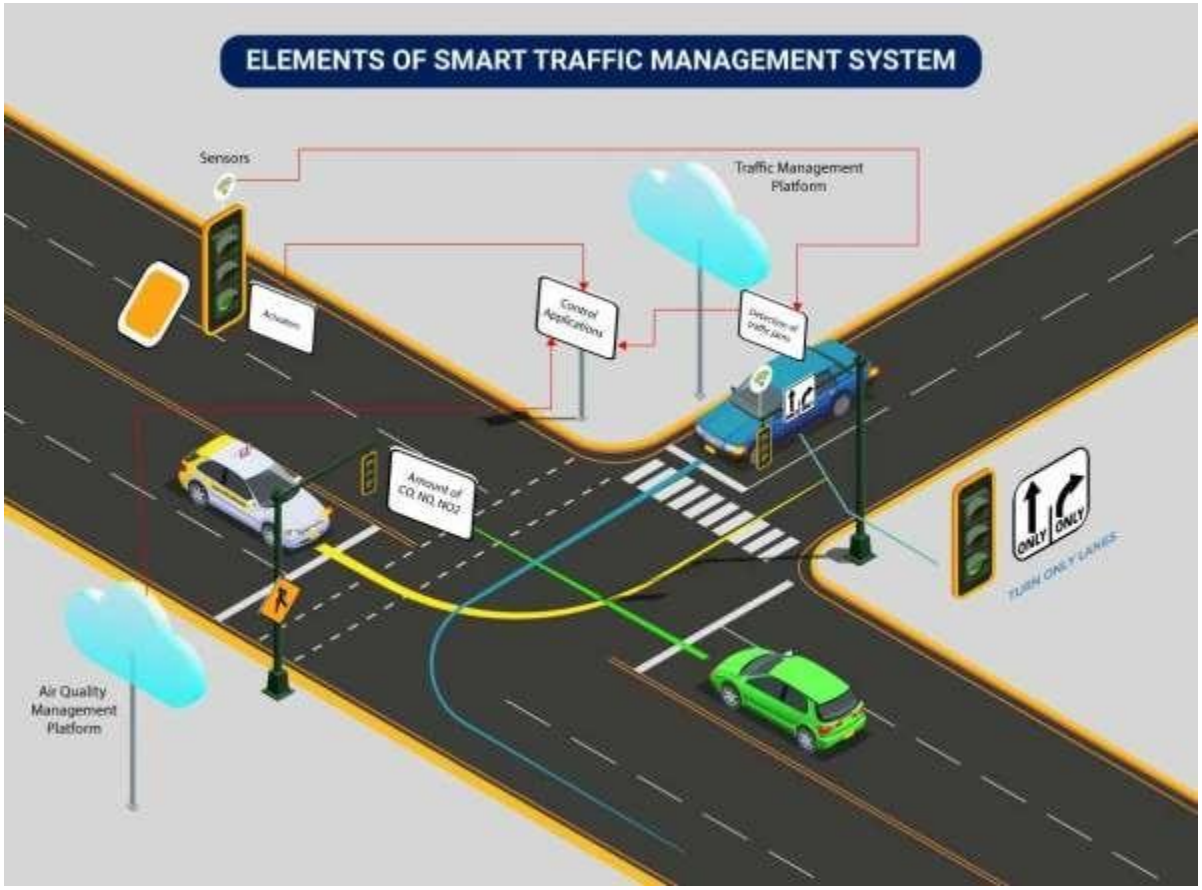
- ✓ Initialize System
- ✓ Configure ESP 8266 module for multi access point through AT commands
- ✓ Connect WI-FI module to WI-FI network
- ✓ Start UDP local port in WI-FI module
- ✓ Establish UDP connection to Raspberry pi
- ✓ Wait for data
- ✓ Change traffic light signal 2 depending upon their received data from raspberry Pi

## KEY FEATURES:

- ✓ Traffic jam Detection
- ✓ Connected vahicles.
- ✓ Modular Control.
- ✓ Emergency Navigation.
- ✓ Road safety Analytics.

## KEY ELEMENTS:

Sensors,Actuators,Field gateways,Cloud gateways,AData lake,Data warehouse,Data analytics,ML algorithms,Rules,User applications,Cross solution integrations.




**CONCLUSION:**

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.