

TRAFFIC MANAGEMENT
MAILAM ENGINEERING COLLEGE
COLLEGE CODE:4216

❖ **Development of an IoT based real-time traffic monitoring system for city governance**

INTRODUCTION:

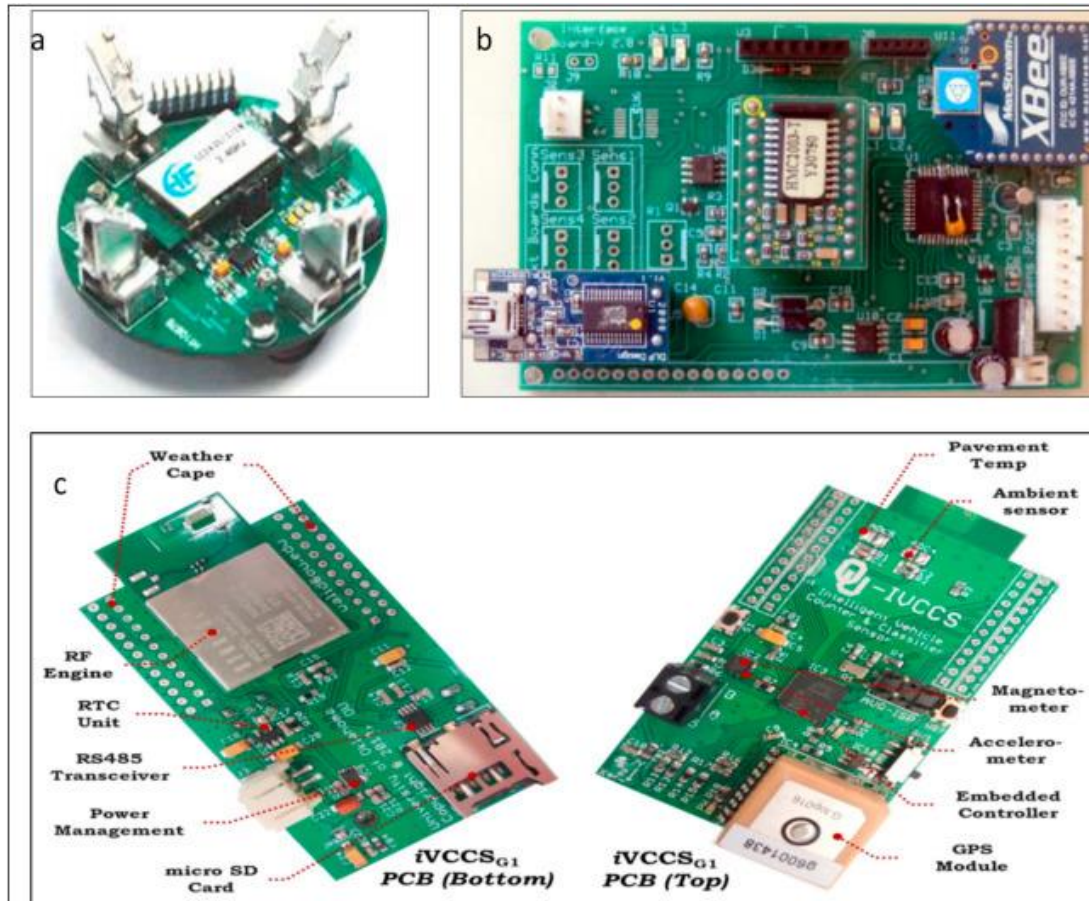
The sustainability and smartness of the smart city concept rely on the technologies adopted to improve the people's quality of life. The smart city governance is one significant aspect of smart city initiatives, which will facilitate the planning techniques for better decision making . One of the key elements of the smart city governance framework is the public value generated out of the smart services provided .

The government has to work on different aspects of smart city solutions such as smart health care, smart building management, smart traffic management, smart parking solutions, smart transportation, etc. to generate public value for the service they provided. The emergence of the internet of things (IoT) has evolved the concept of smart cities. In a smart city environment, the physical infrastructures of the city are equipped with smart devices, which continuously produce multidimensional data in different spaces and these data are processed to achieve intelligence for the infrastructure . Ultimately, intelligence is applied to improve the socio-economic activities of the society.

Wireless sensors for vehicle data collection:

This section presents the review of sensors that are used for vehicle detection and classification. The sensors used in intelligent traffic monitoring systems can be on-road sensors or in-vehicle sensors. The on-road traffic sensors can be again classified into two types: intrusive and non-intrusive. The intrusive sensors are paved on the road and are costly compared to non-intrusive sensors. The intrusive sensors provide accurate information; however, they are questioned for the expenses in terms of installation, maintenance, repair costs . The maintenance of such sensors requires road lane closures and traffic disruptions. The non-intrusive sensors can be fixed on different parts of roads/roadsides. This includes magnetic sensors , ultrasonic sensors , infrared sensors , acoustic sensors , video cameras . Each sensor has its advantages and disadvantages. The ultrasonic sensors are prone to environmental factors . The video monitoring systems are comparatively costly than other sensors when considering the purchase, installation, and maintenance costs . However, the sensors are relatively less expensive in purchase costs. A comparison of different intrusive and non-intrusive sensors have been already reported in a few kinds of research . The infrared sensors are sensitive to bad weather; acoustic sensors do not give accurate results during cold temperatures. The magnetic sensors are unable to detect the vehicles which are not moving ; however, there is no climatic influence. The magnetic sensors are widely used for vehicle detection and classification because of its easy installation, portability, and low cost . The vehicle speed and length can be estimated by one or more magnetic sensors, which will help to approximate the road space occupancy measure

CIRCUIT DIAGRAM:



Besides different types of sensors, a few research efforts have attempted to develop printed circuit boards (PCBs), which can be directly adapted for vehicle detection/speed estimation/classification such as PRS, LCTS, iVCCS, and CPIUS. Fig shows the PCBs of PRS, LCTS, and iVCCS sensor nodes. The main objective of all these researches is to design and develop inexpensive and portable sensor nodes. On average, a single sensor node costs an average of \$30 and operational for many years.

PROGRAM:

```
#Function to simulate a traffic light
```

```
#It is required to make 2 user defined functions trafficLight() and light().
```

```
def trafficLight():
```

```
    signal = input("Enter the colour of the traffic light: ")
```

```
    if (signal not in ("RED", "YELLOW", "GREEN")):
```

```
        print("Please enter a valid Traffic Light colour in CAPITALS")
```

```
else:
    value = light(signal) #function call to light()
if (value == 0):
    print("STOP, Your Life is Precious.")
elif (value == 1):
    print ("PLEASE GO SLOW.")
else:
    print("GO!,Thank you for being patient.")
def light(colour):
    if (colour == "RED"):
        return(0);
    elif (colour == "YELLOW"):
        return (1)
    else:
        return(2)
trafficLight()
print("SPEED THRILLS BUT KILLS")
```

OUTPUT:

```
>> Enter the colour of the traffic light: RED
```

```
>> STOP, Your Life is Precious.
```

```
>> SPEED THRILLS BUT KILLS
```

SUBMITTED BY:

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