SMART TRAFFIC SIGNAL

INTRODUCTION:

overview:

Generally traffic is going on increasing with the growth of population. Traffic is becoming one of the most important issues in rapidly growing cities. Due to bad traffic lot of man-hours are being wasted. And this traffic is controlled by the traffic signals. It has been stated that the first signal to be installed in great Britain was erected in westminster in 1868. It is illuminated by town gas and unfortunately for the future development of signals of this type was demolished by an explosion. Not until 1918 and the signals are again used to control highway traffic when manually operated three color light introduced in New York. And now this Smart traffic signal is used to monitor the traffic signals and respond to the traffic conditions. As traffic is going on increasing in day to day life efficient transportation in becoming critical for quality of life, economic productivity and environmental status is also effecting. Smart traffic signal is an easy way to improve all of these without requiring large investments in physical infrastructure.

purpose:

Smart traffic lights and signals improve traffic flow by detecting congestion The main purpose of smart traffic signal is to control the traffic it detect the information from cloud or server and communicate with the traffic signal and the vehicles and it is self handled by the traffic police at any place. It is monitored by the web and mobile application by displaying the values and we can also monitor the traffic signal according to the status of the city. The traffic signal can also be judged by the noise and environmental status

LITERATURE SURVEY:

Existing problem:

Traffic signal and lights control, traffic assignment problems, scheduling and planning problems and so on. Traffic light control systems and intersection management systems seem to be main problem area. In general the traffic signal controlling we have a problem with traffic signal timings. This traffic signal timings in a road network can not only effect total user travel time and total amount of traffic emissions in the network but also create an iniquity problem in terms of the change in travel costs of users travelling between different locations. Also the problems caused by the traffic and late traffic light control is wastage of fuel increasing air pollution and carbon dioxide emissions owing to increased idling, acceleration and braking. Wear and tear on vehicles as a result of idling in traffic and frequent repairs and replacements.

Proposed solution:

Generally traffic signal helps in controlling traffic but due to above limitations we go with Smart traffic signal in this we get to know about the smart traffic signal controlling. By using this Smart traffic signal the traffic police can operate or control the traffic lights by communication with the vehicles and the environmental status of the city such as noise and pollution he can be able to control the traffic lights by his mobile application at any place with a perfect timing the satus of the city is sent to the traffic police in the form if message and also the traffic can also be controlled by the traffic lights through the device. The data from the server is collected and stored in the cloud and sent to the device in the form of message through the mobile application this helps in controlling the traffic lights by the ON and OFF buttons through the app.

This helps in the proper maintenance of the city traffic conditions and there is no problem with the timing of the traffic lights and waiting of the vehicles and also there is no problem with the wastage of fuel, pollution get reduced.

THEORITICAL ANALYSIS:

Block diagram:

MIT App

NodeRed

IBM IOT platform

Sensors

or

Source code

Web Link

Hardware/software designing:

Generally this system is based on the heavy traffic control system the software implementation of the Smart traffic signal can be done first by designing the code in python here the code has to be connected to the cloud platform to get and read the values from the code. The information i.e, the data which are get from the code by running the data can be seen in the cloud platform which is connected to the python code and data which is saved in the cloud now connected to the node-red

we check the same values getting in the node-red. A new traffic signal mechanism is specially designed for smoothing the basic traffic controlling system. Generally the traffic signal consists of lights such as Red, Orange, Green and Yellow lights in which the traffic police is used to operate by there itself always. But sometimes it may cause some problems like delay, heavy traffic controlling, pollution problems, environmental problems, improper city condition and many but in Smart traffic signal in this process we use some of the light blinking nodes in the designing process so that it is used as a button control method by the traffic police so that he can operate by anywhere which controls all the limitations above.

EXPERIMENTAL INVESTIGATIONS:

We have investigated and clarified that the implementation of Smart traffic signal is used to control the traffic from anywhere by the traffic police. There are no such problems caused by the Normal city traffic control it is rather than that of controlling the traffic in general the traffic signal performance in motor vehicle crashes driver error the failure of signal equipment to adequately detect vehicles, bicycles, or pedestrians and signal de synchronization are all leading causes of crashes in signalized intersections. So to overcome from these problems we came to the implementation of Smart traffic signaling.

FLOWCHART:

signal

Dispaly environment status harm

threshold

Noise and pollution values

no

yes

RESULT:

Hence the implementation of Smart traffiic signal is done the above flowchart conveys the basic information about the process of Smart traffic signal.

ADVANTAGES:

* Reduce day-to-day congestion by improving traffic flow
* Prioritize traffic according to real-time changes in traffic conditions
* Reduce pollution
* No Time dalay
* Improve traffic incident response time by creating a more effective system to monitor traffic incidents

DISADVANTAGES:

* Over data flowing
* Sometimes it causes heavy or wrong data sending to cloud
* Network issues

APPLICATIONS:

Used in many applications like :

* Event traffic control
* Emergency response
* Natural disaster traffic control
* Bridge construction
* Power outage
* Smart traffic control in the city areas

CONCLUSION:

We can coclude that this Smart traffic signal control avoids the major problems facing by the people in their daily life the the environment status, economical status can also be detected. This reduces the cost of economy and also the disturbance causing from increase of vehicles with growth of population. It also hepls from bad collision of vehicles.

FUTURE SCOPE:

We can develope it further by implementing more sensors in the hardware process.

And overcome the disadvantage with more coding to overcome from data overflowing. Intelligent techniques in the mobile application. And also by improving the new versions for the application. Developing the application for more usage.

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APPENDIX:

Source code:

import time

import sys

import ibmiotf.application

import ibmiotf.device

import random

import paho.mqtt.client as mqtt

#Provide your IBM Watson Device Credentials

organization = "jq532a"

deviceType = "raspberrypi"

deviceId = "1234567"

authMethod = "token"

authToken = "12345678"

def myCommandCallback(cmd):

print("Command received: %s" % cmd.data)#Commands

try:

deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod, "auth-token": authToken}

deviceCli = ibmiotf.device.Client(deviceOptions)

#..............................................

except Exception as e:

print("Caught exception connecting device: %s" % str(e))

sys.exit()

# Connect and send a datapoint "hello" with value "world" into the cloud as an event of type "greeting" 10 times

deviceCli.connect()

while True:

poll=random.randint(10, 50)

#print(poll)

noi =random.randint(30, 85)

#Send Noise & Humidity to IBM Watson

data = { 'Noise' : noi, 'Pollution': poll }

#print (data)

def myOnPublishCallback():

print ("Published Noise = %s db" % noi, "Pollution = %s %%" % poll, "to IBM Watson")

if noi >=70 or poll>=40:

print("Harmful environment")

success = deviceCli.publishEvent("Environmental status", "json", data, qos=0, on\_publish=myOnPublishCallback)

if not success:

print("Not connected to IoTF")

time.sleep(2)

deviceCli.commandCallback = myCommandCallback

# Disconnect the device and application from the cloud

deviceCli.disconnect()