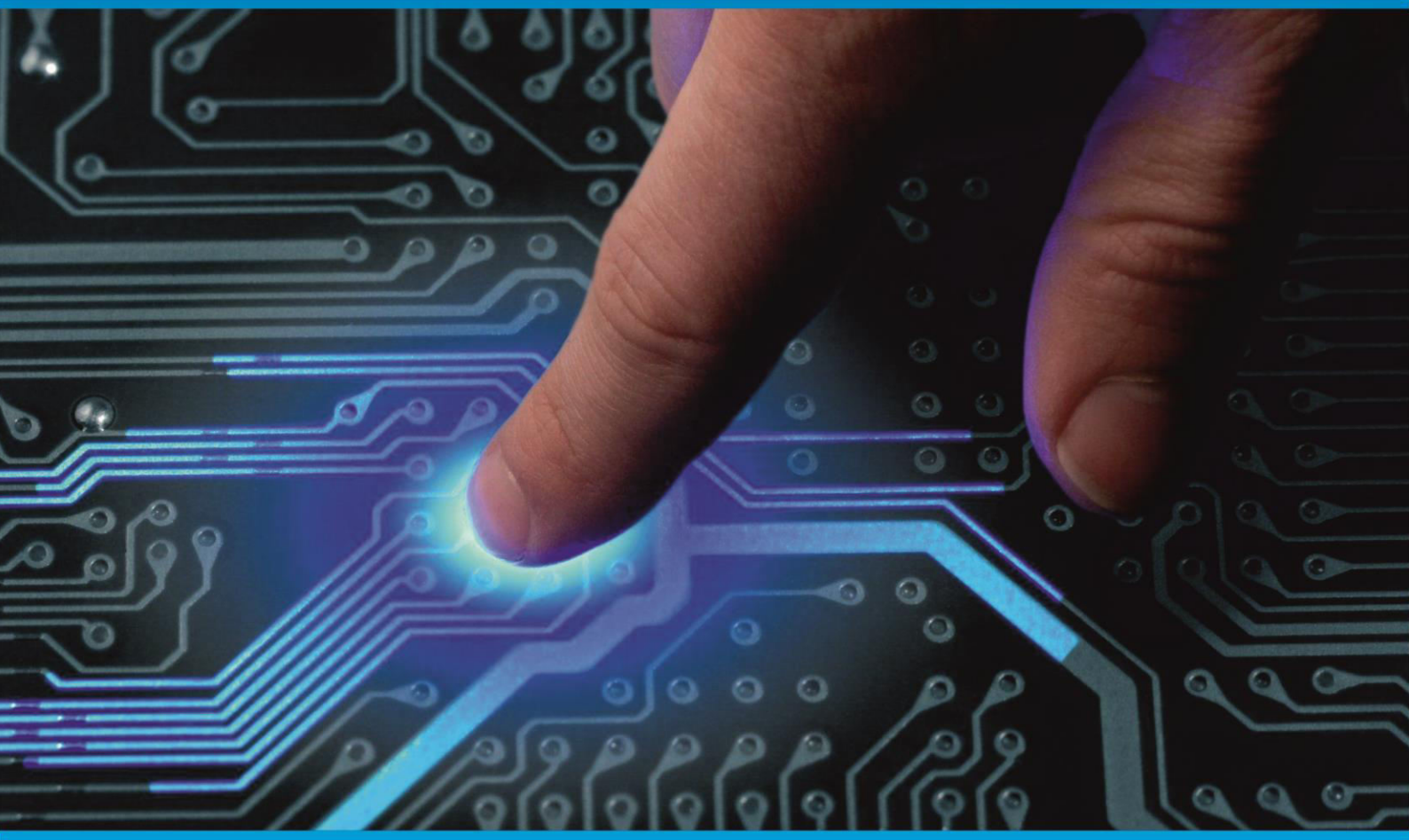
IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 3, March 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

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International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903127|

Smart Traffic Controlling System

Arihararan R, Bharathiraja V, Elamaran S, Gerris Prakash J, Dr.L.Raja

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

UG Student, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

Associate Professor, Dept. of ECE., Sri Eshwar College of Engineering, Coimbatore, Tamil Nadu, India

ABSTRACT: Internet of Things (IoT) is a world-wide network connecting all the smart objects together.Whenever those smart things are restricted to connected vehicles only, then it is called as Internet of Vehicles. This is an electronic complaint booking and fee collection system, It employs Radio Frequency Identification (RFID) technology for making complaint booking and fee payments directly from the prepaid account linked to it. To avoid traffic signal violations and easy case booking. This smart system helps Government and people. From this system people tend to motivate themself not to violate the traffic signal rules and the Government ease in monitoring and managing the case filing system automatically. Internet of Vehicle (IoV) based on intelligent traffic management system, which is featured by high compatibility, easy to upgrade to replace traditional traffic management system, low cost and the proposed system can improve traffic signal tremendously. The Internet of Vehicles is based on the internet, detection technologies and network wireless sensors to recognize traffic object, monitoring, managing, tracking & processed automatically. The basic functionalities of the proposed system include monitoring of speed limits, pollution checks, emergency response to road accidents and providing security etc. should also be taken care to make life easier.

KEYWORDS: Node MCU, IoV,RFID,IOT

I. INTRODUCTION

One of the major problems faced in any metro city traffic congestion. Getting stranded in between heavy traffic is a headache for each and every person driving the vehicle and even to the traffic police in controlling the traffic. One of the oldest ways of handling traffic was having a traffic policeman deployed at each junction and manually controls the inflow of traffic through hand signaling. However, this was quite cumbersome and then came the need for a different type of control- using Traffic signals.

With the exploding population, the surging number of vehicles getting registered every day, the increasing severity of gridlocks incurring greater and greater losses in various aspects, the number of accidents that occur due to such congestions, and with the failing strategies that get adopted, it is high time we all, everybody who is victimized by this menace every day,[9] volunteer to find a solution because we know what would content the common people and turn out to be a successful strategy which will work satisfactorily in the long run.

II. LITERATURE SURVEY

1.Duc-Binh Nguyen, Chyi-Ren Dow,and Shiow-Fen Hwang explained about a Sustainable Fuel Monitoring System Using IOT. His proposal on Existing intelligent transport systems (ITS) do not fully consider and resolve accuracy, instantaneity, and compatibility challenges while resolving traffic congestion in Internet of Vehicles (IoV) environments. This paper proposes a traffic congestion monitoring system, which includes data collection, segmented structure establishment, traffic-flow modelling, local segment traffic congestion prediction, and origin-destination traffic congestion service for drivers. Macroscopic model-based traffic-flow factors were formalized on the basis of the analysis results. Fuzzy rules-based local segment traffic congestion prediction was performed to determine the traffic congestion state. To enhance prediction efficiency, this paper presents a verification process for minimizing false predictions which is based on the Rankine-Hugoniot condition and an origin-destination traffic congestion service is also provided. To verify the feasibility of the proposed system, a prototype was implemented. The experimental results demonstrate that the proposed scheme can effectively monitor traffic congestion in terms of accuracy and system response time.

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2.Prof S. Sukode and S. Gite, proposes about a model for Smart Vehicles using IOT. Vehicle traffic congestion and monitoring has become one of the critical issues in road transport. With the help of Intelligent Transportation System (ITS), current information of traffic can be used by control room to improve the traffic efficiency. In this paper, we propose a new context-aware approach to find the current status and density of traffic and dynamic management of traffic signals along with the environmental conditions. To facilitate this, our proposed architecture of Vehicle Traffic Congestion Control & Monitoring System in IoT would perform well. Basically, this architecture is divided into two major modules i.e. hardware module (Microcontroller, Bluetooth controller, Sensors, etc) and software module (Server, Data Mining techniques, Android Applications, etc). The system utilize new technologies for real-time collection, organization and transmission of information to provide an efficient and accurate estimation of traffic density and weather condition, which can be exploited by traffic-aware applications.

3.Anala Aniruddha Pandit; Ankit Kumar Mundra; Jyot Talreja explains about the Smart Vehicle Tracking System using IOT Technology. RFID (Radio Frequency ID) for developing tracking systems for vehicles. The paper addresses three major problems: traffic signal timings, congestions on roads and theft of vehicles. A novel solution for each problem is presented here. The traffic signalling is made dynamic based on regressions over data archives, containing a detailed set of traffic quotient and time. This technique incorporates a simple, unique way to calculate traffic quotient based on the physical dimensions of the road and nature of traffic on the road. The theft of car is detected using track logs of vehicle. Analysis of congestion forms a key attribute for traffic signalling system and is used for suggesting faster routes to vehicle drivers and balancing the traffic across various routes. The RTSV requires installing RFID tags on all vehicles and RFID readers on various junctions of city for tracking.

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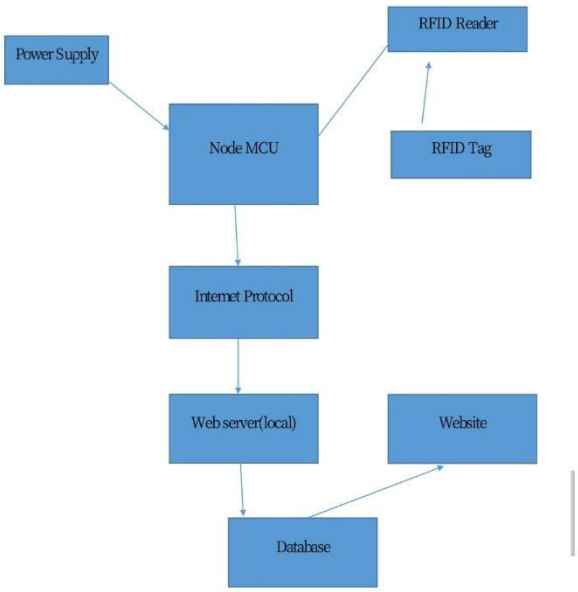
III. SYSTEM DESIGN AND BLOCK DIAGRAM



Basic Model Design each and every component are connected with the Node Micro Controller Unit. RFID Reader is connected with Node MCU and 5V power supply.This solution consists of introducing and setting up an RFID system in our traffic management system first. The RFID reader modules have to be mounted on to traffic signals which control the movement of vehicles in our roads. The RFID tags/labels need to be affixed/stuck to the vehicles. And, as previously discussed, the tags/labels will be fixed to the license plates of the vehicles aiming for the best reachable probability of the label getting read by the reader

IV. COMPONENTS REQUIRED

Hardware Components:

1. NodeMCU – 32-bit ESP8266 development board with Wi-Fi SoC.
2. RFID Receiver

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3. RFID Tag
4. Power Supply

Software Components: Arduino IDE,Embeded C,PHP,SQL

V. WORKING

NodeMCU Code via Arduino IDE

To code NodeMCU via Arduino IDE, the NodeMCU needs to be added to Arduino IDE library first by adding this address to Arduino IDE preferences. After this reference is added to Arduino IDE, download NodeMCU to boards manager and then select NodeMCU 1.0 (ESP12E Module). After NodeMCU is added to Arduino IDE library, upload this code with changing hotspot name and password also token code.

FEATURES OF NODE MCU (ESP8266): 1. Open-source
2. Interactive
3. Programmable
4. Low cost
5. Simple
6. Smart
7. WI-FI enabled
8. USB-TTL included
9. Plug & Play

RFID TAGS (Transponders)

An RFID tag is comprised of a microchip containing identifying information and an antenna that transmits this data wirelessly to a reader. At its most basic, the chip will contain a serialized identifier, or license plate number, that uniquely identifies that item, similar to the way many bar codes are used today. A key difference, however is that RFID tags have a higher data capacity than their bar code counterparts. This increases the options for the type of information that can be encoded on the tag. The amount of data storage on a tag can vary, ranging from 16 bits on the low end to as much as several thousand bits on the high end. Of course, the greater the storage capacity, the higher the price per tag. Like all wireless communications, there are a variety of frequencies or spectra through which RFID tags can communicate with readers. Low-frequency tags are cheaper than ultra-high-frequency (UHF) tags, use less power and are better able to penetrate nonmetallic substances.

RFID Reader

A device used to communicate with RFID Tag. The reader has one or more antennas, which emits radio waves and receive signals back, from the RFID Tag. Also called Interrogator because it interrogates the RFID Tag. Data retrieval - RFID Reader – Device - Emits radio waves - Received by the RFID Tag - Activates the microchip data get transmitted.

VI. CONCLUSION AND FUTURE WORK

The main objective of the proposed system is to automate the on road vehicle checking by the police department. For which we are introducing a new concept that every vehicle should have RFID Tag fitted with the vehicle on windscreen. By replacing the on-road checking and camera placed near by road for checking vehicle, the RF Reading device placed near by the road will read the card details, and automatically validates the owner details and corresponding certificate details. If any traffic violation found the system will automatically send alerts to the specific department. Another facility provided by the system is lost vehicle detection and/or vehicle robbery tracking. The owner and police department can see the vehicle position that is the vehicle is under which station limit. So, it will be much easier to find out the vehicle. Therefore, the best solution is using Radio Frequency Identification (RFID) Technology.

In the future these proposed systems will updated using modern technologies. The number of RFID Reader are improved in Realtime to overcome sensor delay issues. And the reading capability ranges also will be improved. With the tremendous software technology, the same software will be updated for smart logging of vehicle traffic violation history, rash driving history, fee payment history and vehicle owner complete details. It will help police officers or authorized official to know the overall history of the vehicle and driver details.

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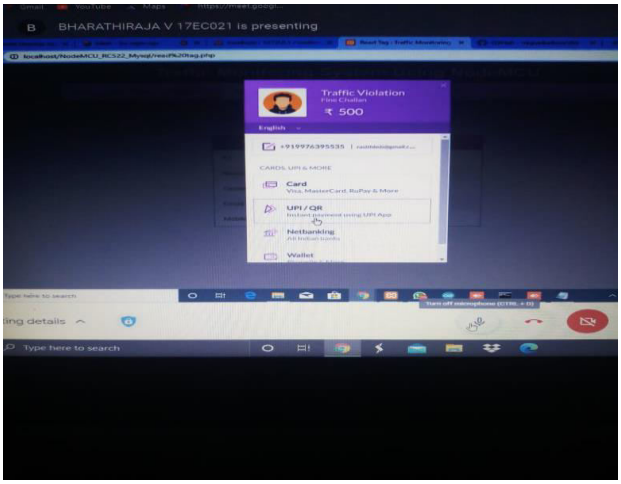

Debit amount from the tag holder

RFID reader reads the RFID Tag

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SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

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