

Real time solution for traffic congestion By self analyzing techniques using Digitalized panel boards

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Abstract: -- Now a day's traffic congestion is one of the top-rated problem which needs to be treated immediately. However, we are in lack of alternative techniques to avoid traffic congestion and manage it. The aim of this paper is to give a complete strategy for management of traffic congestion by self-analyzing technology. Worldwide the Vehicle users keep on increasing drastically day by day but along with traffic congestion. The effects of traffic congestion include delays for work/school, fuel consumption, pollution, mental stress especially for IT people and also the emergency vehicles suffer a lot. To maintain a balanced transportation system is the best solution for traffic congestion.

Key words: congestion, self-analyzing technology, alternative route

I. INTRODUCTION

Traffic congestion is one of the prevailing problem faced universally & increased congestion leads to its satisfaction experience among the road users, also traffic congestion grows drastically as increasing of travel demand & urbanization of cities.

The vehicle users experience mental stress due to traffic congestion on ideal time. Ideal time: vehicle is on but keeps still without continuous movement the vehicle users get comfortable even though the travelling considerable distance without facing ideal time, also continuous movement avoids stress among the users.

Being exposed to the daily hassles of traffic can lead to higher chronic stress. Commuters who are exposed to air pollution, like those riding in non-air-conditioned vehicles such as jeepers and motorcycles, double their health risk.

Aside from stress, they are also exposed to pollutants that can affect the lungs. In fact, the World Health Organization (WHO) said that air pollution is to blame for 3.2 million preventable deaths worldwide every year. The National Emissions Inventory in 2012 said that 71 percent of air pollution in the country comes from vehicles on the road. This

number is even higher in the National Capital Region (NCR) where 85 percent of air pollution comes from vehicles, increasing heart attack and stroke risk. Some commuters who were caught in traffic mess were also deprived of sleep, especially those who had to get up early the next day to avoid the morning rush and get to work on time.

Another social issue is the delay of emergency vehicles such as ambulances, police cars, fire engines etc. struck in a traffic jam and delayed in reaching their destination can lead to loss of property and valuable lives. So there is a need to introduce a smart traffic management. This paper gives a real time solution for traffic congestion.

II. SYSTEM OVERVIEW

Nowadays, it is obvious that the congestion in most countries is on the increase and cities are becoming busier. In my opinion, this problem must be tackled because it is a global issue and most people, especially those who live in big cities, are affected by it.

To resolve the traffic congestion problem, we have to consider essential factors and several

technologies have been proposed for congestion detection, magnetometer, infra reds etc.,

The infrared sensors and magnetic sensors detect the vehicle count, estimate the speed, length of traffic and gets the input. By this input our scheme gets an effective output for managing traffic congestion.

III. TECHNOLOGY & MANAGEMENT

A balance in the transportation is achieved by using self-analyzing technique using Infrared sensors and Magnetic sensors to managing the traffic congestion.

A, B, C and D are conflicts,

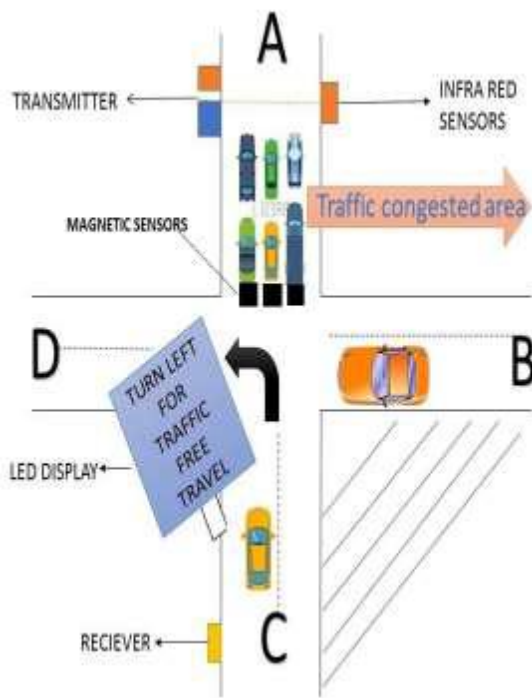


Figure 1.1

If the conflict A is congested by vehicles, IR sensors and magnetic sensors detect it and sends information to the transmitter. A receiver is fixed at the conflict C junction, when the conflict A is congested the receiver receives the information and it displays the alternative route in the LED display. The people in

the conflict C, instead of taking congested route may take the alternative route either B or D.

IV. TRAFFIC SURVEY & ANALYSIS

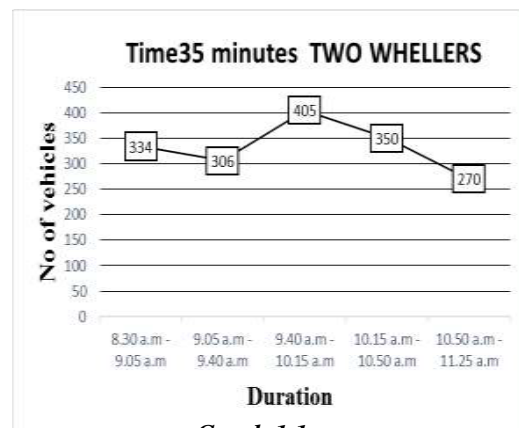
We have done a survey on traffic in Salem near new bus stand.

This table I gives the complete survey of number of two three and four wheelers passing through that road for every 15 minutes.

Time 35 minutes	TYPES OF VEHICLES			
	TWO WHEELERS	THREE WHEELERS	FOUR WHEELERS	OTHERS
8.30 a.m - 9.05 a.m	334	62	105	-
9.05 a.m - 9.40 a.m	306	44	116	3
9.40 a.m - 10.15 a.m	405	78	168	-
10.15 a.m - 10.50 a.m	350	54	142	6
10.50 a.m - 11.25 a.m	270	26	84	-
11.25 a.m - 12.00 p.m	210	32	46	-

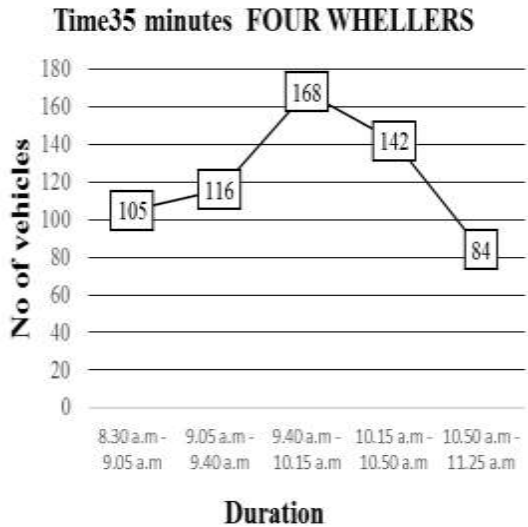
TABLE I

The Graph 1.1 gives the number of two wheelers crossed the road for every 35 minutes.



Graph 1.1

The graph 1.2 gives the number of four wheelers crossed the road for every 35 minutes.



Graph 1.2

V. DEVICE DESCRIPTION

We are using IR sensors (Infra-red sensor) for input in the stretch A transmitter is fitted in the stretch A and a receiver in the stretch C. An ATMEL 8051 micro controller is integrated with a ZigBee module and is connected with the transmitter for feeding input and at the other side of the receiver for output. ATMEL 8051 Micro controller is an 8-bit micro controller based on 8051 instruction set. Its memory ranging from 2KB to 64KB.



Figure 1.2

Vehicle detecting magnetic sensors have ability to detect vehicles and its count. This detector consists of one and two axes magnetic sensor detecting changes in the magnetic field and an accelerometer.



Figure 1.3

ZigBee module is a high-level communication protocol. Its low power consumption limits transmission distances to 10-100 meters of line of sight.



Figure 1.4

Software: Keil C is a compiler for 8051 micro controllers. This allows us to write applications in C, once compiled have efficiency and speed of assembly of language.

VI. PLACEMENT OF DEVICES

The IR sensors along with vehicle detecting magnetic sensors are placed at either ends of the road (stretch A) embedded with a transmitter. A receiver with

controller and module is placed in the stretch C connected with the LED display placed in the stretch C which is visible to all peoples passing over the road.

LED uses a liquid crystal to produce a visible image. LED is composed of several layers which includes two polarized panel filters and electrodes.



Figure 1.5

VII. TRAFFIC OPTIMIZATION

Traffic optimization is the method of reducing the stopping time in road traffic. It includes two phases:

A. Congestion detection phase:

In this detection phase, the magnetic sensors and IR sensors are used to detect the traffic congestion. The IR sensors sends continuous infra-red rays, when the rays are interrupted by any vehicle for more than 2 to 5 minutes and the vehicle detecting magnetic sensors detects the number of vehicles, whenever there occurs a traffic congestion it is detected by the sensor and the sensor sends the information to the transmitter where the ATMEL 8051 microcontroller receives as an input.

B. Congestion management phase:

Management phase gives the solution for traffic congestion and keeps a balance in traffic. The transmitter from stretch A transmits information to

the receiver and the receiver now feed this information into the LED screen which displays the alternative route rather than travelling in the congested route. The alternative routes are already programmed in the device using keil c software. Thus, the people can choose their appropriate route, rather than standing in traffic and wasting hours.

VIII. SYSTEM OPERATION

If a person is driving in stretch C, when he notices the LCD board which displays that stretch A is congested with traffic and also shows to take an alternative route of stretch B or D. The person himself decides and choose whether to take left/right for an interrupted smooth drive.

IX. CONCLUSION AND RECCOMENDATION

Application of self-analyzing technology, we can minimize wastage of man power and the issues included in it, also by this advanced technology we can acquire exact analyzed data and it real time solution for traffic congestion. By this process we can directly reduce the mental stress and other health issues related to it. Emergency vehicle can response fast, we can avoid delays and also manage time in lesser manner. This technology is cost effective we can easily apply at any developing or developed cities at the initial stage it requires technological development adopt the updated technology but over a period of time the technology can be easily applied and traffic congestion can be reduced to makeable level.

X. FUTURE RESEARCH

Traffic congestion can be studied after application of self-analyzing technology and future work application of self-acting technology with minimal usage of man power along with it, results in improved traffic performance and better output.

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