INTERNATIONAL JOURNAL OF ADVANCE SCIENTIFIC RESEARCH AND ENGINEERING TRENDS

TRAFFIC DETECTION USING INDUCTIVE LOOP

Sahil Deshpande[1], Sagar Sutar[2], Mandar Kudale[3], Prof. Urchana Ubale[4]

Student, AISSMS, IOIT Pune, Maharashtra[1,2,3]

Asst. Prof., AISSMS, IOIT Pune, Maharashtr [4]

sahildeshpande125@gmail.com[1], sagarsutar433@gmail.com[2], mandarkudale23@gmail.com[3], archana.ubale@aissmsioit.org[4]

--- ***---

Abstract:- Inductive loop traffic detectors are a very commonplace technology, however the physics behind their operation is quite complex – involving the ferromagnetic effect, magnetic induction and eddy currents. Despite their widespread use, cost and time constraints may see the end of inductive loops in favour of newer technologies.

Keywords: *Inductive loop, vehicle detector, intrusive and non intrusive sensors*

--- ***---

I INTRODUCTION

Inductive loop detectors have become the most commonly used method of traffic detection since theirintroductionover50yearsago.Inmost cities, they are utilised to reduce traffic congestion. But how exactly do inductive loops work? Some sources, such as HowStuffWorks.com(2000)– which suggests that detection is based solely on the ferromagnetic effect–tend to over simplify the physics involved. This report outlines the basics of inductive loops and explores how vehicles are really detected by these ubiquitous devices.

Inductive loop traffic detectors are a very commonplace technology, however the physics behind their operation is quite complex – involving the ferromagnetic effect, magnetic induction and eddy currents. Despite their widespread use, cost and time constraints may see the end of inductive loops in favour of newer technologies.

Traffic congestion is a worldwide problem. At times it can be very irritating to be stuck in traffic on a daily basis. In recent times, there has been a lot of talk regarding the need for a density base control system.
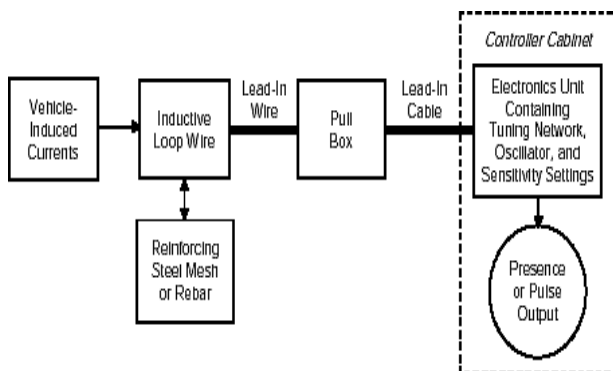
II. LITERATURE SURVEY

EXISTING SYSTEMS-

LalaBhaskar*, AnanyaSahai+DeeptiSinha+GarimaVarshney[1]. Through this paper we present the use of inductive loops as an instrument to measure traffic density. A microcontroller can be programmed to receive information About traffic density on different lanes, as measured by the inductive loops. Algorithms that not only ease congestion but also ensure the people in less congested lanes don't have to wait too long are discussed. Depending upon the traffic density a Suitable algorithm can be executed to clear the congestion. A new design of inductive loop to suit our algorithm in case of multiple lane traffic has also been discussed here.

S.Sheik MohammedAli, Boby George [2]. This paper presents a novel inductive loop sensor which detects large(e.g., bus)as well as small (e.g., bicycle) vehicles and help a traffic control management system in optimizing the best use of existing roads. To accomplish the sensing of large as well as a small vehicle, a multiple loop inductive sensor system is proposed. The proposed sensor structure not only senses and segregates the vehicle type as bicycle or motor cycle or car or bus but also enables accurate counting of the number of vehicles that too in a mixed traffic flow condition. A prototype of the multiple loops sensing system has been developed using a virtual instrumentation scheme and tested.

Joel Johnson [3]. This paper proposed that inductive loop traffic detectors are a very commonplace technology, however the physics behind their operation is quite complex – involving the ferromagnetic effect, magnetic induction and eddy currents. Despite their widespread use, cost and time constraints may see the end of inductive loops in favor of newer technologies.

III. THE PROPOSED SYSTEM

The objective of proposed work is to present a solution for avoiding congestion of vehicles. Above block diagram is used in this detection system. According to density of vehicles, signal passes through the lead-*in cable.*

Fig.1.Block Diagram

Processing Unit works according to signal given by lead-incable. At last, with the help Processing Unit the reisindication of signal by using Led'si.e. Red, Green,Yellow.

IV. METHODOLOGY

Module 1-Arduino UNO

Operating Voltage : DC5V

Input Voltage :7V-12V

Digital I/O Pins :14

DC Current Per I/O Pin :40ma

Analog Input Pins :6

DC Current For 3.3V Pin :50ma

Module 2-LCD 16X2 Display

Operating Voltage :4.7V-5.3V

Current Consumption :1MA

Consist of two rows and each row can print 16characters.

Each character is build by a 5*8 pixelbox.

Can work on both 8 bit and 4 bitmode.

Module 3- Relay

Relay is electrically operatedswitch.

Type : Solid StateRelays.

Working Voltage :5V-DC

Operating Voltage :5V-DC

Trigger Current :70ma

Operating Time:10msec

Maximum Switching : 300operating/minute

IV. RESULT

By implementing traffic detection system using inductive loop, signal changes according

to the density of vehicles. Indication of signals by using three led's i.e. Red, Green, Yellow.

V. CONCLUSION

Inductive loop traffic detectors are quite complex devices, using magnetic fields, induced magnetism and eddy currents to function. Since their introduction in the 1960s, they have become the most utilised traffic sensor, but that may change in the future as other technologies emerge.

VI.FUTURE SCOPE

Inductive loop signature technology shows great potential to significantly improve the traffic datacollection.

Solution to travel monitoringmarket.

Continue to develop and improveproducts.

Marketing andsales.

VII .ACKNOWLEDGEMENT

REFERENCES

[1] Lala Bhaskar*, Ananya Sahai+ Deepti Sinha+ Garima Varshney and Tripti Jain, "Intelligent Traffic Light Controller Using Inductive Loops for Vehicle Detection".

[2] S.Sheik Mohammed Ali, Boby George, Lelitha Vanajakshi, and Jayshankar Venkatraman, "A Multiple Loop Vehicle Detection System for Heterogeneous and Lane- lessTraffic."

[3] Joel Johnson, "Traffic Detection by Inductive Loops."

[4] R. J. Koerner and C. Park, "Inductive loop vehicle detector," U.S. Patent 3989932,Nov. 2,1976.

[5] H.M.PatrickandJ.L.Raymond,"Vehiclepresenceloopdetector, "U.S.Patent 4472706, Sep.18,1984.

[6] M. A. G. Clark, "Induction loop vehicle detector," U.S. Patent 4568937, Feb. 4,1986.

[7] S. H. Lee, Y. Oh, and S. Lee, "New loop detector installation guidelines for real-time adaptive signal control system," J. Eastern Asia Soc. Transp. Studies, vol. 6, pp. 2337–2348,2005.