Review on Automatic Traffic Light Control System

[1]Azhar Shaikh, [2]Tushar Moholt, [3]Harshal Shinde, [4]Rohit Shivale, [5]Prof. K.P.Saharan

TSSM's BSCOER Pune, India

Abstract— *A vehicle is sculptural as associate rectangular patch and classified via blob analysis. By analyzing the blob of vehicles, the pregnant selections unit of activity extracted. Pursuit moving targets is achieved by examination the extracted selections and activity rock bottom distance between consecutive frames. The experimental results show that the projected system will offer quantity and helpful info for traffic investigation. Our goal is to build a Robust and Safe Traffic System. In existing system, most probably there occurs a situation where, there are many traffic jam. Waiting time is increased, and also there occurs a situation in which priority vehicles like ambulance, firebrigade, etc., don't have a free way to go. Our system will overcome all the drawback of current system. As well as it has special condition for handling priority vehicle.*

Keywords— Image processing, Distributed System, Background Subtraction, Intelligent Systems.

I.INTRODUCTION

A development of an intelligent remote control system for street light and traffic signal control system needed because present traffic light controllers based on old microcontroller such as AT89C51 which has very less internal memory and no in-built ADC. These systems have limitation because will use the predefined program that does not have the flexibility of modification on real time application. The present traffic system have fixed time interval for green and red signal which does not provide the flexibility to the system and street lighting system public sector are design according to the old standards. The intelligent remote control system for street light and traffic signal control system consist of high-performance, low cost, low power. The system will able to deal two basic problems: i) Detection of traffic volume by using genetic algorithm ii) automatic control of street light using sensor. The traffic signal management is a very important facet in electronic equipment town traffic system. As we have a tendency to all glorious, traffic systems area unit timevarying, random system. thus lots of standard strategies for traffic signal management primarily based precise models fail to deal efficiently with the advanced and ranging traffic things. During all amongst in every of the most options of contemporary

cities is that the permanent growth of population in a comparatively little space. The consequence of this truth is that the increase within the range of cars and additionally the requirement of movement and transport of individuals and product in urban town networks. Traffic congestion in main road networks is one amongst the most problems to be addressed by today's traffic management schemes. Automation combined with the increasing penetration of on-line communication, navigation, and advanced driver help systems can ultimately lead to intelligent vehicle main road systems (IVHS) that distribute intelligence between margin infrastructure and vehicles which above all on the long term are one amongst the foremost promising solutions to the traffic congestion drawback. During this paper, we have a tendency to gift a survey on traffic management and management frameworks for IVHS. First, we have a tendency to provide a short summary of the most presently used traffic management strategies for freeways. Next, we have a tendency to discuss IVHS based traffic management measures. Then, varied traffic management architectures for IVHS like PATH, Dolphin, Auto21 CDS, etc. are mentioned and a comparison of the varied frameworks is conferred. Finally, we have a tendency to sketch however existing traffic management methodologies may fit in Associate in Nursing IVHS-based traffic management set-up. Fast transportation system and rapid transit system are nerves of economic

development for nation. All developed nation have a well-developed transportation system with efficient traffic control on road in, rail, and air transportation of good, industrial products, manpower and machinery are the key factors which influence the industrial development of any country. Mismanagement and traffic congestion result in long waiting time loss of fuel and money. It is therefore utmost necessary to have a fast, economical and efficient traffic control system for nation development.

II.LITERATURE SURVEY

In current system traffic get collected at particular places. Now days there are lack of traffic analysis which results into heavy traffic. Many time emergency services are trapped. We refer various papers. The author Guo Mu [1] describes A camera-based rule for period of time durable stoplight detection and recognition was planned.

This rule is supposed chiefly for autonomous vehicles. Experiments show that our rule performs well in accurately investigating targets and in determinative the gap and time to those targets. However, the current methodology planned here can have some drawbacks. First, the maneuver performs well within the daytime but not additionally within the dead of night. The warning rate can increase within the dead of night as results of lots of light-weight interference. Whereas the maneuver can discover every circular traffic light and other people with arrows, exclusively the classical suspended, vertical traffic lights were detected. Detection and recognition of lots of types of traffic lights will meet an important house for future work. Shu-Chung [2] proposed driver assistant system design supported image process techniques. A camera is mounted on the vehicle front window to sight the road lane markings and confirm the vehicle's position with regard to the lane lines. A changed approach is projected to accelerate the HT method during a computationally economical manner, thereby creating it appropriate for time period lane detection. The no heritable image sequences are analyzed and processed by the projected system that mechanically detects the lane lines. The experimental results show that the system works with success for lane line detection and lane departure prediction. P.F. Alcantarilla [3] presents degree automatic road traffic management and looking system for daytime sequences using a B&W camera. Necessary road traffic data like mean speed, dimension and vehicles numeration are obtained practice laptop computer vision methods. Firstly, moving objects are extracted from the scene by suggests that of a frame-differencing algorithm and texture data supported grey scale intensity. However, shadows of moving objects belong to boot to the foreground. Shadows are far away from the foreground objects practice silk hat transformations and morphological operators. Finally, objects are tracked in AN extremely Kalman filtering technique, and parameters like position, dimensions, distance and speed of moving objects are measured. Then, per these parameters moving objects are classified as vehicles (trucks or cars) or nuisance artifacts. For results mental representation, a 3D model is projected onto vehicles among the image plane. Some experimental results practice real outside sequences of images ar shown. These results demonstrate the accuracy of the planned system to a lower place daytime interurban traffic conditions. Rashid Hussian [4] proposed system involves use of Wireless sensing element network technology to sense presence of Traffic close to any circle or junction and so able to route the Traffic supported Traffic handiness or we will say density in want direction. this method doesn't need any system in vehicles therefore are often enforced in any Traffic system quite simply with less time and fewer pricey additionally. this method uses Wireless sensing element networks Technology to sense vehicles and a microcontroller based mostly routing formula programmed for wonderful Traffic management. Ms Promila Sinhmar [5] proposed system records vehicle count in its memory at user predefined recording interval on real time basis. This recorded vehicle count
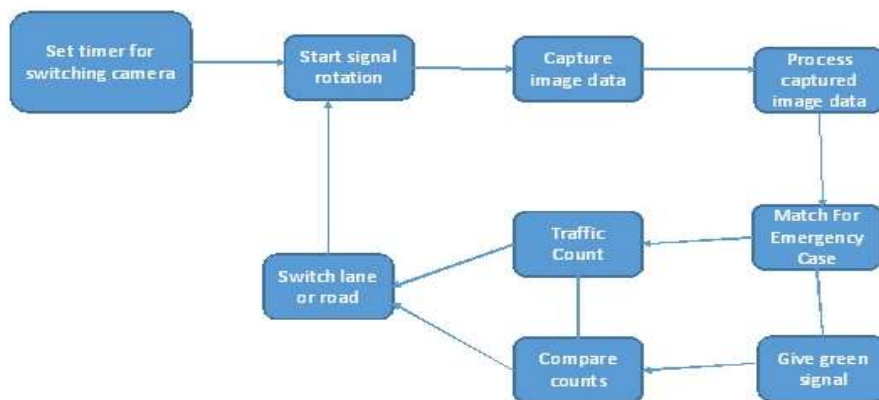
Fig 1 : System Architecture

information is utilized in future to research traffic condition at various traffic lights connected to the system. For acceptable analysis, the recorded information is downloaded to pc through communication between microcontroller and also the computer. Administrator sitting on laptop will command system (microcontroller) to transfer recorded information, update lightweight delays, erase memory, etc. therefore administrator on a central station laptop will access traffic conditions on Associate in Nursing approachable traffic lights and close roads to scale back traffic congestions to an extent. In future this technique is accustomed inform individuals regarding completely different places traffic condition. In this system the traffic lights will be controlled mechanically. it's not needed to expressly set a time or amendment the traffic lightweight manually.

III. PROPOSED SYSTEM

Our propose system shown in fig1.

Advantages of proposed system:

1. Reduction of vehicle-pedestrian conflict

2. Waiting Time can be reduced or increased.

3. Duration of Light can be adapted according to the Traffic in Lane.

IV. MATHEMATICAL MODEL

a. Let 'S' be the | Smart traffic management System as the final set

$S = \{\ldots\ldots\ldots$

b. Identify the inputs as D , V

$S = \{D, V \ldots$

$D = \{D1, D2, D3, D4|$ 'D' given Direction$\}$

$V = \{V1, V2, V3, \ldots$ | 'V' gives Video$\}$

c. Identify the outputs as O

$S = \{D, V, T, P, A\ldots$

$D = \{D1, D2, D3, D4|$ 'D' given Direction$\}$

$T = \{T1, T2 \ldots|$ 'T' is the calculated time for green signal$\}$

$P = \{P1, P2, P3, \ldots$ | 'P' gives the Priority for vehicle $\}$

$A = \{A1, A2, A3, \ldots$ | 'A' gives the images of rule breakers to send to admin $\}$

d. Identify the functions as 'F'

$S = \{D, V, T, P, A, F\ldots$

$F = \{F1(), F2(), F3(), F4(), F5(), F6() \}$

F1(V) :: Detect vehicle

F2 (V) :: Count number of vehicles

F3 (V) :: Count time required for detected vehicles to cross the road.

F4 (T) :: trigger signal

F4 (D) :: switch camera direction

F6 (V) :: Detect rule breakers and save their image from feed.

V. IMPLEMENTATION

Tools and Technologies Used:

1. Microsoft Visual Studio

Microsoft Visual Studio is an Integrated Development Environment from Microsoft. It is used to develop computer programs for Microsoft Windows ,as well as, for web applications. Visual Studio uses Microsoft Software Development Platform such as Windows API, Windows Forms, Windows Presentation, Foundation Windows Store and Microsoft Silver Light. Written in C++ and C#.

2. Emuga OpenCV

Emuga CV is a Cross Platform .Net wrapper to OpenCV image processing library. Allowing OpenCV functions to be called from .Net compatible languages such as C#, VB,VC++, IronPython etc. The wrapper can be compiled by Visual Studio, Xamarin Studio and Unity, it can run on Windows, Linux,Mac OS X, iOS, Android and Windows Phone.

3.C

C# is a multi-paradigm programming language encompassing strong typing, imperative, declarative, functional, generic, object-oriented programming disciplines. It was developed by Microsoft with its .Net initiative and later approved as a standard by Ecma (ECMA-334) and ISO (ISO/IEC 23270:2006). C sharp is one of the programming languages designed for the Common Language Infrastructure. C sharp is a general-purpose, object-oriented programming language.
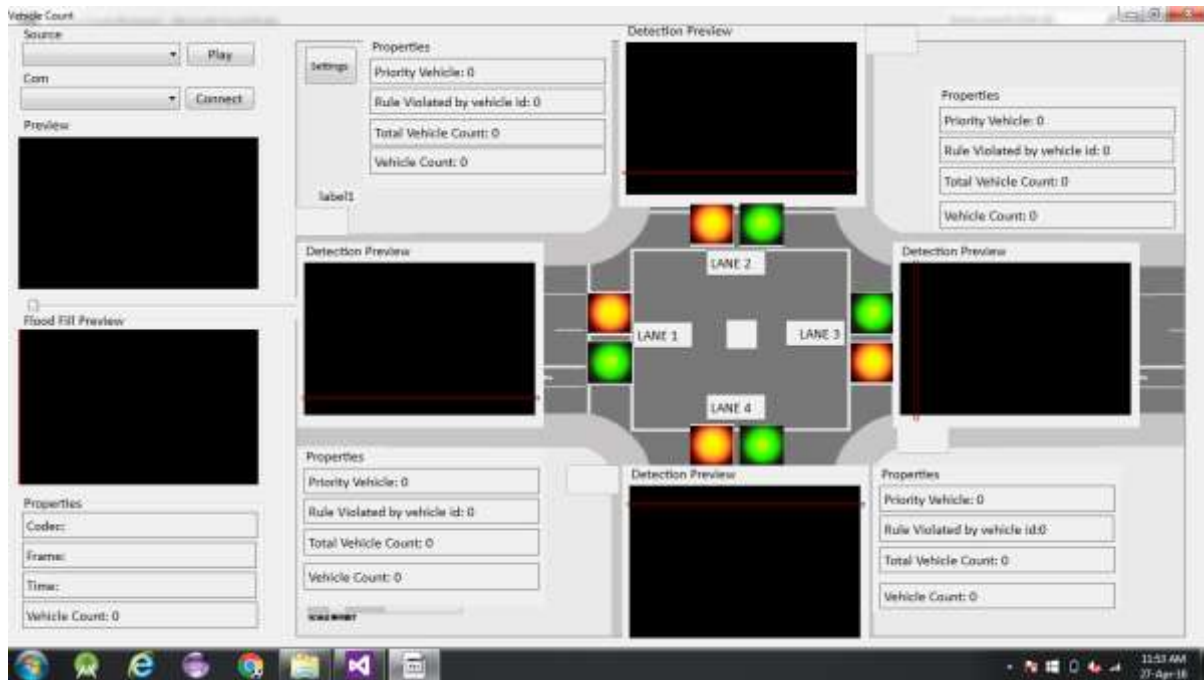
Fig 2 : Output

VI. CONCLUSION

Thus, we have successfully build our project named "Automatic Traffic Light Control System". Our System helps in reducing Traffic in peak hours, as well as it provides an efficient way to deal with priority vehicles.

REFERENCES

[1] "Traffic Light Detection And Recognition For Autonomous Vehicles", February 2015, 22(1): 50–56

[2] Shu-Chung,Yeong-Chin Chen,Ching-Haur Chang, "A Lane Detection Approach Based On Intelligent Vision" Computers And Electrical Engineering 42(2015)23-29.

[3] P.F. Alcantarilla, M.A. Sotelo, L.M. Bergasa "Automatic Daytime Road Traffic Control And Monitoring System",2008

[4] Rashid Hussian,"WSN Applications: Automated Intelligent Traffic Control System Using Sensors", IJSC Evolume-3, Issue3, July 2013.

[5] Ms Promila Sinhmar, "Intelligent Traffic Light And Density Control Using Ir Sensors And Microcontroller", Volume 2, Issue 2, March 2012.

[6] H. Teodorescu, Et Al., "Fuzzy And Neuro-Fuzzy Systems In Medicine," CRC Press, Boca Raton, FL, USA, 1999.

[7] R. Danescu, S. Nedevschi, M. Meinecke and T. Graf, "Stereo Vision Based Vehicle Tracking in Urban Traffic Environments", Intelligent Transportation System, IEEE conference on, (2007), pp. 400-404.

[8] N. J. Ferrier, S. M. Rowe, A. Blake, "Real-time traffic monitoring", proceeding of the second IEEE workshop on applications of computer vision", (1994), pp. 81-88.

[9] Vu and M. Barth, "catadiopetric omnidirectional vision system integration for vehicle-based sensing", in proc. Of IEEE Intelligent Transportation System Conference, (2009).

[10] M. Cao, A. Vu and M. Barth, "A Novel omni-directional vision sensing technique for traffic surveillance", in proc. of IEEE.