Smart Algorithm For Traffic Congestion and Control

Bhuvaneshwari.S [1], Bhuvaneshwari.R [2], Vidhya.M [3], M.Therasa [4]

[123] *Dept. of Computer Science & Engineering, Panimalar Institute Of Technology, Chennai,Tamilnadu, India*

[4]*Assistant Professor, Dept. of Computer Science & Engineering, Panimalar Institute Of Technology, Chennai,Tamilnadu, India*

---***---

Abstract— *The number of conveyances is incrementing day by day ,traffic jams are becoming a prevalent scenario in astronomically immense cities due to which a plethora of man hours are been killed . Thus it engenders a desideratum for an efficient traffic management system. This paper proposes to implement a perspicacious traffic control system which is predicated on the counting of conveyances utilizing authentic time video processing technique. The video sequences from a camera are analyzed utilizing blob detection and counting methods to obtain the most efficacious way.The computed traffic density is compared with other components of the traffic in order to control the traffic signal. The system has an advantage of utilizing RFID (Radio Frequency Identification) sensors to ascertain law enforcement. Ergo, any car or conveyance which breaks the traffic rules can be facilely caught. Through this paper we endeavored to present a progress in the subsisting manual traffic control and congestion system.*

Keywords— **Astute Traffic Control, Number Plate Recognition (NPR) , RFID, Sequential Timing Algorithm, Traffic Density, Video Processing**

1. INTRODUCTION

Traffic light posts are situated at road intersections and pedestrian crossings. Traffic light posts blink the light Signals after a certain duration which is not a consummate systematic system as it cannot solve the traffic quandaries plenary. Our system is

predicated on video processing for which the input is a video frame the output of video processing may be either an image or a set of characteristics or parameters cognate to the image. Our system will detect conveyances through video frames. Control strategies is utilized for traffic control .It can play a consequential role in incident clearance and recuperation by averting congestion diffusion and by dispersing traffic jams. A camera will be installed along side the traffic light. It records the live traffic density on the road. This technique reads the video

and takes the count of the vehicle, Once an threshold value is reached traffic signals are transmuted according that. The path of each lane is opened and the traffic light to turn on or off based on the estimated period of time by the controller. It will additionally be acclimated to monitor the traffic conditions. It can reduce the traffic congestion and eschew the time being wasted by a green light on a vacuous road. This system is more reliable to detect conveyance presence because it utilizes authentic traffic condition images. This system is intended for places where traffic policeman can take clever, critical decisions and handle emergencies. This project also analyses an number plate utilizing RFID reader, Automatic Number Plate Apperception is a paramount research field due to its number of applications such as parking lot management, enterprise ingression management, automatic toll amassment enforcement, traffic law enforcement, border surveillance, glommed conveyance search ANPR algorithms are generally composed of the following three processing steps: 1) extraction of a number plate region; 2) segmentation of the plate characters; and 3) apperception of each character.

2. LITERATURE SURVEY

Dr Helonde J B Dr. Wadhai V Vivek Deshpande Shiv Sutar p[1] Propose a Wireless sensor network (WSN) technology thanks to the recent advances in electronics, networking, and information technologies. The handling this data against the congestion, its reliability, and loss recovery is very tough task. Md. Mahbubul Alam Joarder, Khaled Mahmud, Tasnuva Ahmed, Mohsina Kawser, Bulbul Ahamed p[2] Suggested a three major parts- number plate detection,plate character segmentation and Bangla character recognition. The Bangla character recognition is implemented using multilayer feed-forward network.Md. Ruhul Amin Noor Mohammad Md. Abu Naser Bikas p[3] proposed an designed to locate and recognize the number

plate of a moving vehicle automatically by Automatic Number Plate Recognition (ANPR). After successfully complete localization extraction of number plate it send that portion to a OCR to fetch the text of the number plate for further processing.

3. EXISTING SYSTEM

Traffic light posts blink the light Signals after a certain duration which is not a consummate systematic system as it cannot solve the traffic quandaries plenarily. Thus traffic jams take place. Lack of trained traffic police officers and old manual traffic light control system made this quandary worse in many cities Since the traffic conveyance pressure is not same at every road concurrently, Traffic lights should be controlled by an adaptive system which will detect the traffic conditions and use traffic light signals accordingly.

3.1 DISADVANTAGES

- Performance affected by weather factors (eg: fog, rain,snow)
- High installation and maintenance cost
- Day to night transition

4. PROPOSED SYSTEM

This proposed system uses four cameras in one intersection of four way road. A CPU is connected with camera which is responsible for video processing. The RFID (Radio Frequency Identification) will be placed under the road. The hardware used are;HD camera, buzzer, controller,RFID reader. The camera records the vehivular motion and traffic flow continuously. The video is divided frame by frame using an efficient algorithm and counts the number of vehicles on road. A sequential traffic timer system is been developed and implemented according to the number of vehicles. Microcontroller reads the signal from CPU and starts the sequential traffic light. When the li9ght goes from green to red microcontroller sends signal to CPU and it initiate the RFID reader. The RFID reader ensures the law enforcement from the car been crossed the line. Thus this system detects the law breakers. It can reduce the traffic congestion and avoid the time being wasted by a green light on an empty road.

4.1 ADVANTAGES

- High accuracy
- Reduce man power
- Rich array of data availability

5. BLOCK DIAGRAM
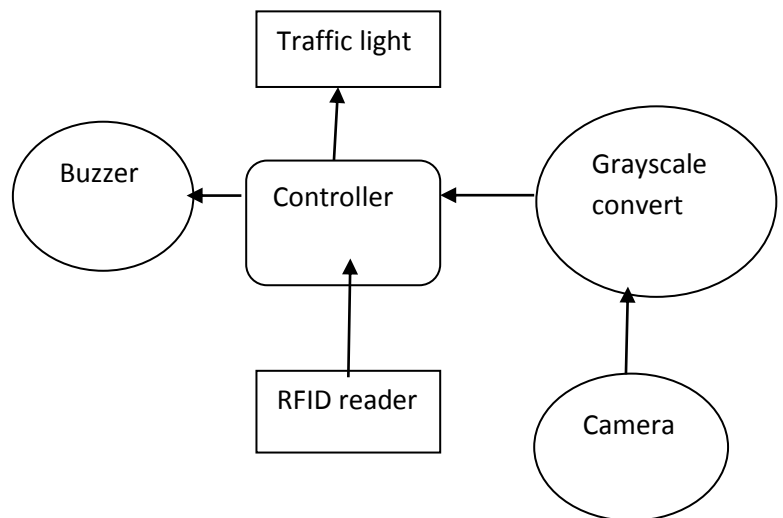
5.1 Preprocessing

Take input video and Extract the images from the video and feed the images to YCbCr color space for blob detection Video is given as input and from the input the back ground is been detected and extracted. The input video is divided into frames. The frames are compared and the background is extracted.

5.2 Traffic Light Control Mechanism:

As we are working with a four way intersection, for the time being, we will break this down for just one road only. For each road we will check twice for traffic. Microcontroller cheaks the input string. If ARM7 controller could read the string it will consider the road is crowded which is state 1. If ARM7 controller could not read the string it is state 2 which indicates the road is not so crowded.This system will be built to detect and identify any vehicle which breaks law specially traffic signal law. RFID Tags are intelligent bar code that contains some information which can be read by using RFID reader.

5.3 Law Enforcement by RFID

RFID (Radio Frequency Identification) tags are already installed in almost every vehicles number plate in Dhaka this contains the basic information of the owner of the vehicle. For every car there will be a unique passive RFID. This passive RFID will be energized by the reader. During the red signal this RFID reader will be active and other time it will be deactivated. During its active time if any car transgresses the law and move despite red signal, those cars will have to cross the RFID reader which will be placed beneath the road and RFID will then detect the RFID tag of the car.
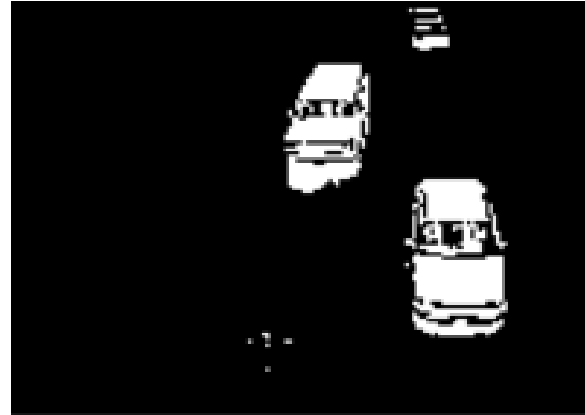
6. RESULTS AND DISCUSSION:

Fig 1: video of traffic

Fig 2: background extraction

Fig 3: gray scale conversion

7. CONCLUSION

Video discovery innovation turned into another wilderness ininstance of vehicle following as a result of its reliability. This sort of movement flagging is more organized anyway; we are far from seeing far reaching utilization of this kind of movement controlling by video location. Every zone should be solely customized and the RFID preparing and support is fairly expensive. Not at all like whatever other framework, our framework affirms high exactness and we are sure about its achievement and attainability.There are still a few situations where manual controlling is required. Interfacing all the individual crossing point on the other hand hub could be the following enormous stride. Thinking about the movement weight of the adjoining hub would make the framework more falsely smart. Gathering information from neighboring hubs would give additional exactness amid activity flagging. Taking live movement bolster from the hub and placing it in a devoted server for the mass individuals would be exceptionally encouraging.

REFERENCE

[1]Md. Mahbubul Alam Joarder, Khaled Mahmud, Tasnuva Ahmed, Mohsina Kawser, and Bulbul "Bangla Automatic Number Plate Recognition System using Artificial Neural Network"*AhamedAsian Transactions on Science & Technology (ATST ISSN: 2221-4283) Volume 02 Issue 01*

[2]Dr Helonde J B Dr. Wadhai V Vivek Deshpande Shiv Sutar GNIET, Nagpur, India MAE, Pune, India MITCOE, Pune, India. MITCOE, Pune, India. "EDCAM: Early Detection Congestion Avoidance Mechanism for Wireless Sensor Network"*International Journal of Computer Applications (0975 – 8887) Volume 7– No.2, September 2010*

[3]Md. Ruhul Amin, Noor Mohammad,Md. Abu Naser Bikas "An Automatic Number Plate Recognition of Bangladeshi Vehicles" *International Journal of Computer Applications (0975 – 8887)Volume 93 – No 15, May 2014*