AUTOMATED EFFICIENT TAFFIC CONTROL SYSTEM USING IMAGE PROCESSING

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Abstract- The frequent traffic jams at major intersections call for an effective management system. This system suggests implementing a smart traffic controller using image processing. This project used filtering method, which filtered the image and released all waste objects and only showed the vehicles. This application useful to control the traffic For developing this application, eclipse is used as an integrated development environment for developing an web application. a programming language Java is used .

MySQL is used as backend, which is an open source relational database management system (RDBMS). It has been customized to be used in the future to control the traffic light sign by giving each sign sufficient time, on.

I. INTRODUCTION

As the population of the modern cities is increasing day by day due to which vehicls travel is increasing which lead to congestion problem. Traffic congestion has been causing many critical problems and challenges in the major and most populated cities. The increased traffic has lead to more waiting times and fuel wastages

II. LITERATURE SURVEY

Chirag Thakkar , Rajesh Patil [1] discussed about the Smart Traffic Control. In today's life we are facing many problems one of which is traffic congestion becoming more serious day after day. The major reason leading to traffic jam is the high number of vehicle which was caused by the population and the development of economy.

Currently, traffic lights are automatically getting ON and OFF depending on the timer value changes. In this, time is being wasted by a green light on an empty road which can be utilized on some other lane. These frequent traffic problems like traffic jams have led to the rise of the need for an efficient traffic management method.

Parichita Basak, Ramandeep Kaur [2] present about the image processing. Traffic congestion is becoming more and more serious day by day. Main reasons for augmented traffic jam are increasing number of vehicles, the poor infrastructure and no proper distribution. The main reason for traffic is increased number of vehicles and increased number of population and development of country as whole. Management of traffic in India is a tough job and only

manual efforts cannot solve this serious issue. We need a system to handle this situation more effectively.

Kavya P Walad, Jyothi Shetty [3] proposed about traffic light control system. Traffic is the major problem which country faces today this is because of the increase in number of vehicles. The increase in number of vehicles resulting to the need of a smart system that could efficiently handle traffic congestion based on the density of traffic. Discusses about some of the existing traffic light control system and their drawback and image processing technique i.e. edge detection techniques that helps in finding traffic density. Here also discussing Sobel, Prewitt, and Robert, Canny edge detection and their advantages and disadvantage.

Dr. J.Ajayan, R. Keerthikga, R. Kiruthiga, V. J. Mohen, M. Priyadharshini [4]. The aim paper is to prioritize emergency vehicles and to ensure the smooth motion and efficient flow of vehicles by reducing the traffic volume, overall waiting time and travelling time of the people. As population increases, the use of automobiles increases day by day which lead to serious dilemma. A proposed system uses the Raspberry pi-3 that evaluates the traffic density using the piezoelectric material and IR sensor which accomplishes dynamic timing slot according to the traffic density and the RF transmitter receiver is used to prioritize the emergency vehicle which stuck in the overcrowded roads and allow the smooth motion of vehicles. Therefore this system provides the fast, efficient traffic control for our nation development.

SweSwe Win, Wut Yi Win,Theingi [5]. An efficient traffic control system is an important issue to reduce the traffic congestion. In this research, area based traffic control system is implemented for fourway intersection by using image processing techniques. This system is a vehicleactuated signal type control system such that traffic cycle time can be varied and related to the actual demands by traffic. The CCTV traffic video file at a station in Mandalay is utilized as the input for the image processing. The amount of vehicles bounded on the road is estimated and defined as the traffic area with the numbers of pixels.

Mrs. Harshitha R, Chandan R, Poornima K , Navyashree U N, Sandesh Gowda P [6]. Traffic light control is one of the serious technical hazards of the urban areas in almost every country around the world. This is due to rapid increase in number of vehicles in order to reduce the time and complexity. This newly developed project will enable the traffic light to switch from red to green based on traffic

density. The simplest way for controlling a traffic light uses timer for each phase since, we proposed a system for controlling the traffic light by image processing. The system will detect vehicles through images and the image sequence will then be analysed using digital image processing for vehicle detection, and according to traffic conditions on the road traffic light can be controlled.

Ravi Patel, Dr. Tejas Shah [7]. The flexibility and fast optimistic result trends of image processing has made it an eminent tool for research in recent scenario. The features of image processing are envisaged for video image processing which estimates the traffic density at cross roads and research of real time traffic control has been proposed in this paper. The processed data have been used to synchronize traffic lights with variable time delays.

Detty M Panicker, Radhakrishnan B [8]. Traffic control is considered as one of the fastest developing technologies in the world. In India with the growing number of vehicles, traffic jam at junctions has become a serious issue. Normally Traffic police, Timers, Electronic sensors are used to control the traffic jam. But nowadays, image processing techniques are used to control traffic.

III. PROPOSED SYSTEM

This system is software that takes a picture and count number of vehicles . It has been customized to be used to control the traffic light sign by giving each sign sufficient time, depending on the number of vehicles on each direction.
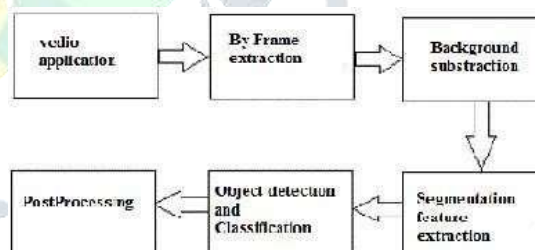

Figure 1. Image Processing Steps

A. Frame extraction : Processing a video directly is a very difficult task . we know that a number of image sequences forms a video . extracting a frame from a video at a particular time and processing that image is performed in this module .

B. Background Subtraction : in this module firstly it will initialize a background . after that, to detect moving object the current frame is subtracted with reference frame . its accuracy is very high in extracting the characteristics of target data or image . several operations will be performed like opening , sharpening edges , noise removal from frame and closing .

C. Segmentation and Feature extraction : in this module , the generated image will be partitioned into meaningful regions and it is

based on measurements taken from the image. This process separates the patterns into more meaningful and separable classes. The goal of feature extraction is to reduce a variable sized image to a fixed set of visual features. Feature extraction is achieved using area based approach which extracts knowledge driven characteristics based on image segmentation.

D. Object detection and Classification : in this module , classification will be achieved by recognizing the features or the characteristics. The goal of object detection is to identify the location of object in the image and it will perform the counting the number of instances of an object .

E. Post Processing : in the post processing module , the number of objects or vehicles will be counted from all four directions . based on that particular time will be given to all four signals . after that , three directions will be given red signal and one with green signal . after the specified time , the system will scan image from each side with a gap of specified time. This will be completely in the looping system until manually switch off the system .

IV. TEST RESULTS AND DISCUSSION JAVA/J2EE software is used to implement this system .for detection of vehiclesthe background subtraction algorithm has been used . Four frames are given as input to the system . The frames are processed and generates new images that contains the moving object with black background .in this process moving object is detected and subtraction of the image is done . This system works efficiently in normal weather conditions except when there is too much fog .

V. CONCULSION

This project work focuses on automated traffic management system using image processing which will eliminate the drawbacks of the present system. Implementing this system is economically very cheap and it aims at effective management of traffic congestion. It is also cost effective than the existing system.

Image processing techniques and back ground subtraction methods are used to count the number of vehicles coming from all directions . This system is very effective as it will be capturing images time to time and processing them to count vehicles and identifying any emergency vehicles to help them to cross the signal as early as possible .

VI. REFERENCES

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