Literature Review

[1] Automatic Traffic Using Image Processing

**Authors:** Al Hussain Akoum Email: Hussain\_alkoum@hotmail.com

* Accepted: August 11, 2017.

**Abstract:**  The frequent traffic jams at major intersections call for an effective management system. The paper suggests implementing a smart traffic controller using real-time image processing. The sequence of the camera is analyzed using different edge detection algorithms and object counting methods. Previously they used matching method that means the camera will be installed along with traffic light. It will capture the image sequence. To set an image of an empty road as a reference image, the captured images are sequentially matched using image matching; but in my paper, we used filtering method, which filtered the image and released all waste objects and only showed the cars, and after it well showed the number of cars in image. this paper is software that takes a picture or video. It has been customized to be used in the future to control the traffic light sign by giving each sign sufficient time, depending on the number of cars on each direction.

**Goals:**  In modern life, we have to face with many problems, one of which is traffic congestion becoming more dangerous day by day. As a result of the increase in vehicle traffic, many problems emerged, for example, traffic accidents, traffic congestion and so on. Traffic congestion was a very difficult problem. As a result, many investigators have paid attention to ITS (Intelligent Transportation System) such as predicting traffic flow based on traffic monitoring at the traffic junctions to detect bottlenecks. This task remains a challenge for computer vision systems. Several approaches to this task have been implemented over many decades

**Materials and Methods:**

we will discuss about smart traffic control by using image processing to count vehicles. Vehicle detection and counting are important in calculating traffic congestion on highways. The main objective of detecting cars and counting in a video or image traffic paper is to develop a methodology for automatic detection of vehicles and count them on highways. Our method does not use background, it uses a filter that we detect and count the cars, takes a video or an image and makes some processing to finally give the number of cars.

1. **Vehicle Detection Using Video**

Many techniques have been developed in Video Processing during the last four to five decades. One of them is matching technique, it takes the previous image and current image and then make subtraction between that two image and according to the difference it well gets the percentage of congestion. But now we use filter technique that can give accuracy result up to 90%.

1. **Vehicle Detecting Using Image**

Another method used in my paper is by using image processing. Image processing is processing of images using mathematical operations by using any form of signal processing for which the input is an image. The output of image processing may be either an image or a set of characteristics or parameters related to the image. Image processing is used to detect object but in this paper especially detect vehicles.

[2] Density Based Traffic Control System Using Image Processing

**Authors:** Uthara E. Prakash , Athira Thankappan , Vishnupriya K. T. , Arun A. Balakrishnan.

* Published: November 2018

**Abstract:** - In this paper, a novel real-time traffic control system which can easily keep traffic in control using image processing techniques is presented. In this method, a webcam is used in each stage of the traffic light in order to take pictures of the roads where traffic is bound to occur. Count of vehicles in these images is calculated using image processing tools in Matlab and different timings are allocated according to the count along with a green signal for vehicles to pass. In the proposed prototype, the green and red signals are represented using LEDs and the decrementing timer for the green signal is represented by a seven segment display

**problem:** With the uncontrolled population growth, travelling has turned out to be a really hectic task in today’s world. The increase in travelling people has caused a drastic growth in traffic at every nook and corner of the city. This, in turn, is contributing to the wastage of precious fuel and time which leads to impatience and frustration of the people. Traffic congestion is a common problem that has arisen due to the increased number of vehicles on the road. In order to deal with this problem.

**Methods:** The proposed system is implemented in Matlab with an objective to reduce the traffic based on density. Four main steps are considered for the system: a) image acquisition b) RGB to grayscale transformation c) image enhancement and d) morphological operations. A camera is installed and used to capture video of the highway. The video is recorded continuously in consecutive frames and each frame is compared to the initial captured image. The total number of cars present in the video is found out using image processing algorithms. If the total number of cars exceeds a predefined threshold, heavy traffic status is displayed as a message.

**Algorithm:**

1. Start program

2. Capture image of the blank road by the connected

camera module for reference

3. Capture image with vehicles

4. The images are converted from RGB to grey

5. A threshold value is found using Otsu’s principle

6. Find the difference between frames using threshold

7. Add Gaussian noise to the difference output

8. Apply Weiner filter to it to filter the blobs

9. Convert to binary image

10. Fill holes to the blobs

11. Open all blobs having an area greater than 2000

12. Determine the number of cars

13. Display the output image

14. The count of vehicles is found and displayed.

15. According to the number of vehicles, green light is

allotted for different timings for each count displayed

by a seven segment

**Future Works:**

The weather conditions are not taken into account which may affect the image quality when it becomes foggy or in heavy rains. More advancements can be made to the proposed system to check identification of vehicles that pass through the system circle which could help in traffic surveillance.