**Title:** Automated traffic control system

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**Motivation:** The traffic light control system is widely used to control and monitor traffic in many of roads. But in most underdevelopment and developing countries this traffic controlling system are becoming an ineffective process because of their too much amount of vehicle than the ratio of their roads. This traffic light control system uses a fixed time delay for a specific traffic lane and lights change its color after a few specific time periods which creates congestion during peak hours. For saving time people sometimes break traffic rules that is one of the reasons for occurring accident in the roads. Facing these problems, I am trying to solve this problem in a new way. This research focused on traffic density at each lane using sensors and will count vehicles through vision of camera that will be set at each junction point of each road. Based on the traffic density traffic controller will take decision by itself which lane will stay at its lane and which one can move on.

**Literature review:**

In the 1920s, when manually operated traffic signals were being replaced by automatic, engineers soon realized they needed a method to collect the traffic data previously obtained visually by the police officer on duty. Among those data concerned was Charles Adler, Jr.,of Baltimore, MD, a railway signal engineer[12].He developed a sensor that was activated when a driver sounded his car horn

Traffic lights developed in 1912, That are signaling devices which help to control traffic flow at road intersections, railways and other locations. Traffic lights consists of three different lights. The green lights indicate the traffic to proceed in their indicated direction. Yellow indicates vehicle to prepare for a short stop. And red signal prohibits any traffic from proceeding. [1]

Traffic models can be used in "what‐if" situations so they can show influence of some changes in system and system surroundings. They can be used to achieve maximum efficiency and developing new technique. [10]

Many countries suffer from the traffic congestion problems that affect on the transportation system in cities and cause serious problem. In spite of replacing traffic officers and automatic traffic systems, the

optimization of the heavy traffic jam is still a major issue in multiple junction nodes [2].

There are two steps here for implementing this process to solve this traffic problem. One is the hardware part and another one is software phase. Hardware phase will be implemented at each junction of road. A special camera will be set on a stand as it can cover a large area thorough its lens.

[3] we have proposed a set of traffic rules, required to be checked when any vehicle attempts to leave any zone, realizing the effect of deadlocks collisions among the vehicles. Applying the traffic control to this case study, it ensures that (1) no inter-vehicle collision can happen (2) each vehicle can complete any finite number of tasks, with any route for each task, if the route of the last task ends up with a depot (meaning that the vehicle terminates its operation by parking in the depot).

There are several ways to solve this problem. Traffic lights sometimes become obsolete to handle a huge traffic in many cities as they always follow a fixed time schedule. When there is intersection among the roads traffic police always get puzzled to solve this issue. The most efficient way to solve this problem is the sensor detection process. Based on the sensors output traffic lights will change its input. In this method the control is adapting to the traffic.

But in this process there arise a general problem because of huge numbers of variable. For that there is needed a huge computer effort. To solve this problem there can be used fuzzy problem. [5,6,7,8] which is used to solve many problems.

The term Intelligent Transport Systems (ITS) has been introduced in transport and traffic engineering during the 1990s, and can be defined as information and communication upgrade to classical transport traffic flow, efficiency of passenger and goods transportation, safety and security of transport etc. [11]

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Khiang Tan et al [4] (1996) developed a graphical simulation windows software for the design and implementation of an automatic traffic lights controller by fuzzy logic technology and also compared the result with the tradition light system controller in which the newly designed method found to be better in terms of performance.

Rashid Hussain et al [5] (2013) proposed a concept of Wireless sensor n technology that have the real-time traffic data at an intersection and then to measure the timings to the traffic to clear off the intersection. This method was proceeding to be efficient as it didn’t require any built in system in vehicles for its working.

A four phase signal system was designed for the intersection by f Webster’s method for signal design and IRC method for the minimum time for pedestrian crossing. [9]

Shilpa et al [6] (2009) worked on a new idea that “Intelligent traffic light controller” which was made by making use of GSM services as it provides the information regarding traffic flow to users by sending SMS. This system was compared with faced traffic signals and found to be more efficient.

But in this thesis we will talk about a topic which will be efficient to solve traffic problem if this can be implemented. Once I said that there are two phase in this research. One is the hardware part. For that a small camera will be set on a stand at the peak and this stand will be set at the intersection point of each road. Throughout this lens camera will capture image at every possible second. And will send this image data to next level. And that is software or algorithm phase.

Karthick et al [7] (2012) proposed a system to analyses the live video cameras footage recordings to control the traffic automatically by allotting green time by calculating the number of vehicles which results the traffic density. which acts as a input for the algorithm which use to calculate staying time of vehicles in traffic intersection.

Vidhya & Banu [8] (2014) designed a project to develop a density based dynamic traffic signal system. The project based on processing image captured in the traffic signal and then it was converted to grayscale image and after that to calculate the number of vehicles. drawn to have its threshold. Output the number of vehicles gives the knowledge of density which was further used for allocating green time to the traffic on the approach lane by using the Raspberry pi as a microcontroller.

After receiving those data this information will be analyzed through an algorithm. In that algorithm it will take the number of vehicle of certain time as its parameter. By this numbers it will calculate the density of that particular lane. Based on the result this method will lead to a decision whether the traffic lights will turn red or green.

For this method time wasting on traffic will be reduced at a high scale. If there is any lane which has no vehicle to move that lanes light will be turned red.

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