INTELLIGENT TRAFFIC MANAGEMENT SYSTEM

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Abstract – *In today's world managing the increasing traffic system is a big problem. Intelligent traffic system provides a solution to these problems with the help of new technologies. Intelligent traffic management system is an integrated system and this system have broad range communication, control, electronic technologies to solve this traffic management problem. Intelligent traffic management system is being used in the developed countries since past some decades, but it still new concept for some developing countries like India , China, Brazil, etc. Right now we are study four major parts of the system i.e., Emergency Management System, Advanced Traffic Management System,, Advance Public Transportation System and Advanced Traveler Information System. Objective of our paper is to study Various intelligent traffic management system architecture and model and review such models to get complete knowledge of architecture .*

Key Words:**(Processing Speed, Cloud Computing, Parallel Computing, Grid Computing, Cluster Computing)**

1. INTRODUCTION

This Paper Presents The Implementation Of Intelligent traffic management System . In this paper different Intelligent Traffic management system architecture and model developed by various researchers all over the world has been studied and review to get complete knowledge of this architecture. In intelligent traffic management system we are divided into four main branches based on their implementation in different aspects of transportation management i.e. Emergency management system, Advanced Public Transportation, Advance Traffic Management system and Advanced Traveler Information System. Complete comparison analysis of all the models developed in for all branches have been done to highlights the plus and minus points of these developed management system and based on their gaps in the literature have been highlighted.

2. PROBLEM STATEMENT

Over several decades, traffic congestion has become a serious problem in the major cities. Congestion is particularly associated with motorization and the diffusion of the automobile, which has increased the demand for transportation infrastructure. However, the supply of the transportation infrastructure has often not been able to keep up with the growth of mobility. Traffic congestion problems consist of incremental delay, vehicle operating costs such as fuel consumption, pollution emissions and stress that result from interference among vehicles in the traffic stream, particularly as traffic volumes approach a road's capacity. Across cities more people are spending more time sitting in traffic jams than ever before Traffic congestion occurs when the demand is greater than the available road capacity. There are many reasons that cause congestion; most of them reduce the capacity of the road at a given point or over a certain length, for example people parking on the roads or increase in the number of vehicles. Traffic congestion also occurs due to traffic signal. At traffic signal when road traffic density is low signal still shows the same traffic time due to which other lane traffic increases which result in traffic congestion. Sometimes due this problem the ambulance, police vans, fire-fighting vehicle are not reaching at their destination on time.

3. OBJECTIVE

Objective of proposed system is to improve efficiency of existing automatic traffic signaling system. The system will be image processing based adaptive signal controlling. The timing will be calculated each time change automatically depending upon the traffic load. Proposed system will be functioning based on traditional system along with automated signaling. System will have artificial vision with the help of digital camera mounted on motor for its rotation to face lanes and sense the traffic on the road. The mission of a traffic signal program is to provide good basic service that satisfies the goals of the agency and regional partners involved in transportation systems management and operations (TSM&O).

4. FLOW CHART
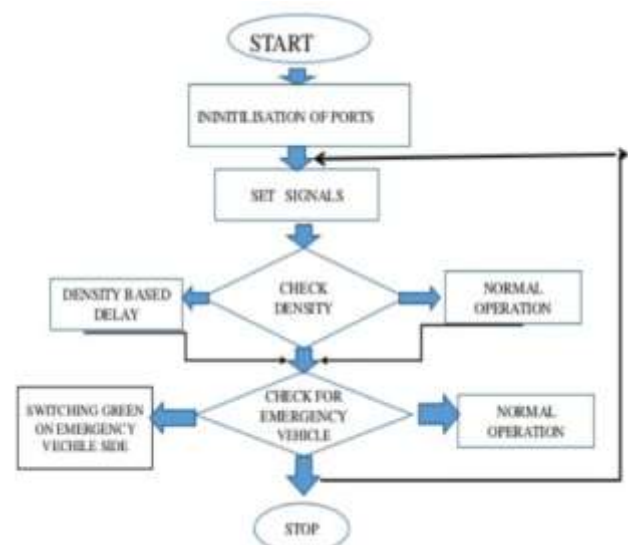
5. BLOCK DIAGRAM

6. REQUIREMENTS

Video image Processing System:

It allows the user to define a limited number of linear detection zones on the roadway in the field-of-view of the video camera. When a vehicle crosses one of these zones,

it is identified by noting changes in the properties of the affected pixels relative to their state in the absence of a vehicle. it estimates vehicle speed and then measure the time that an identified vehicle needs to traverse a detection zone of known length. the number of vehicles (volume) and speed of each vehicle in order to calculate the time each vehicle needs to cover a particular route

Time and Speed table updating System:

Timetable and speed table updating system stores all estimated travel times and traffic mean speeds related to each route in previous days. A new time table and speed table with up dated data will be created every 20 seconds. On the other hand the time interval between two Time tables or speed tables is 20 second, hence in this study t0, t1,...,tk are the times at which time tables and speed tables have been created. Such tables involve the characteristics of a street network, for example travel time and traffic mean speed are set to ∞ and 0 respectively for nodes not directly linked to each other ($T(i,j,tk)= \infty$, $S(i,j,tk)= 0$ for $i \neq j$) . In additions the estimated travel time and traffic mean speed from one node to itself are equal to 0 and ∞

respectively ($T(i,j,tk)=0$, $S(i,j,tk)= \infty$ for $i=j$). Therefore, each vehicle driver located at a node can communicate with the route-finding system and ask for the shortest path toward his/her destination. This system will take care of the information provided by the timetable and speed table updating systems and will select the shortest route among all possible routes.

Travel Time Modeling:

Travel time modeling is used to estimate the travel time associated with each street segment by taking into account the events that periodically cause traffic congestion (e.g., going to work at a specific time). Here days are categorized, e.g. Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday.

Image Enhancement:

Travel time modeling is used to estimate the travel time associated with each street segment by taking into account the events that periodically cause traffic congestion (e.g., going to work at a specific time). Here days are categorized, e.g. Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday.

7. ADVANTAGES

1. Priority based traffic clearance

2. Ambulance detection using Image processing

3. Safety message display on LCD

4. Red Signal break (Number plate detection)

5. If any obstacle in any particular lane then display ALERT message on LCD

8. CONCLUSIONS

In this study two different models have been developed based on different decision criteria:

· Finding the shortest path based on the real time data collected from the street network.

· Finding the shortest path using travel time modeling method based on historical and real time data that incorporates both concepts of short-term travel time forecasting and shortest path finding. Therefore, this research effort opens many interesting and practical issues for future work.

9. FUTURE SCOPE

This project can be enhanced in such a way as to control automatically the signals depending on the traffic density on the roads using sensors like IR detector/receiver module extended with automatic turn off when no vehicles are running on any side of the road which helps in power consumption saving.

• No. of passing vehicle in the fixed time slot on the road decide the density range of traffics and on the basis of vehicle count microcontroller decide the traffic light delays for next recording interval. In future this system can be used to inform people about different places traffic condition. This can be done through RADIO. Data transfer between the

microcontroller and computer can also be done through telephone network, data call activated SIM This technique allows the operator to gather the recorded data from a far end to his home computer without going there

• Traffic lights can be increased to N number and traffic light control can be done for whole city by sitting on a single place.

• In ambulance system, the data of the patient in the ambulance can be sent to the Hospitals via GSM technology. Thus, it can provide early and fast treatment of the patient.

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