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MOBILITY USING CONGESTION AND ACCIDENT AVOIDANCE WITH DRIVER ASSISTANCE SYSTEM

A.Rajiv, Assistant Professor, Department of ECE, Sriram Engineering College
C.Lakshmi, Assistant Professor, Department of ECE, Sriram Engineering College

ABSTRACT

In our paper several issues of sustainable transport is brought into the spotlight. In this fast paced world everyone wants everything to happen just in the tick of a second and the wink of an eye. It is widely acknowledged that traffic congestion threatens economic growth and irritates today's pacing world. With the increasing use of transport worldwide, it is necessary to derive solutions to ease traffic. Moreover transportation now accounts for about 40 per cent of the total use of energy in the world. As a result, there is an increased focus on how best to make it easier and more attractive for people to use public transport. For the last two decades IT (Electronics + Computer) has been positioned as the instrument for travel substitution. IT has been successful in all fields it has been applied to. Similarly it would definitely be a great help to the strange challenge that transport poses on environment. There are three main things which we must concentrate on congestion avoidance, accident avoidance,driver assistance and automize only in needed situations with zone detection. it is much more important in this present day to derive a method for disabled personalities to drive with ease. Developing special vehicles discriminate them from the normal man and also it may not be cost feasible. Our project will be a globalised solution which will be applicable to mankind of all categories. It may be applied to any nation (developed, developing or under developed).We proudly state that it is location transparent. Every nation has started their development process in ITS. ITS USA has announced that they expect the industry to be fully grown by 2030 and we hope that ours would be a small contribution to the world ITS.

Keywords— ITS (Intelligent Transport Systems), Zone detection, Arterial management, Angle detection jacket, CDMA, Image Processing, Threshold.

I.INTRODUCTION

The main objective of our project is to clear traffic congestion and accident avoidance and automize only in needed situations (For Disabled Personalities).

Traffic congestion now affects most of our major road networks. Road transport accounts for a substantial part of our total energy consumption, and still there are so many accidents and fatalities on roads each year. Information and communication technologies (ICT) can enable building of intelligent transport and infrastructures, to offer new advanced solutions to today's transport problems.

These intelligent systems can assist the driver in the driving functions, thus preventing, avoiding or mitigating accidents. They can also provide drivers with real time information about the road network, thus avoiding congestion. And they can optimize a journey or the engine performance, thus improving overall energy efficiency. There is clear evidence that investments in such technologies could bring major economic benefits. Traffic congestion has been increasing. Congestion reduces utilization

of the transport infrastructure and increases travel time, air pollution and fuel consumption.

The father of our entire idea is the MOBILE SOLUTIONS and GPS. Yes, to avoid cameras we need to use some other device to let traffic communicate and that was were our mobile communications helped us. We aren't going to use mobiles here but the idea is borrowed from that technology. **"Why can't we have traffic towers just like mobile towers to get traffic information"**, is the idea that struck spontaneously when we think of communication and analysis without cameras. This idea is the core theme of our paper.

II.EXISTING SYSTEM

A. AUTOMATED VEHICLE CONTROL SYSTEM

OVERALL SYSTEM:

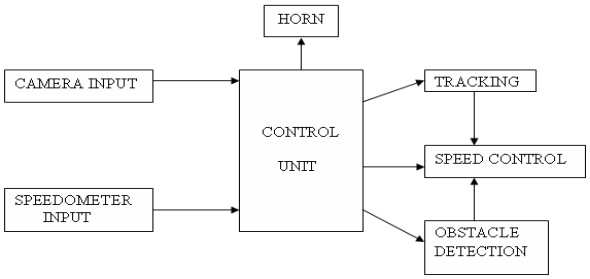

Fig 1 Automated System

DISADVANTAGES:

1. Camera is used to analyse traffic this causes cost over load when applied to all roads and to get a high resolution image. Moreover a large number of cameras are used to focus the entire road in different dimensions.
2. The tracking mechanism involves painting two white strips along the length of the road. These two strips are used for identifying the road in camera.
3. This system is available only for gear-less two -wheelers.

In [1] the author discussed the vehicular adhoc network (VANET), In VANET the collision Avoidance (CA) system is an emerging technology among scholars and vehicular industries in recent years. The wireless CA system is transfer emergency message to drivers before they reach accident zone on the highway. Use dichotomized headway model, the braking model, and greenberg's logarithmic model to make vehicular mobility traces. In this paper proposed an analytical model for warning message through Collision Avoidance system. The main concern is using minimum Roadside Units (RSUs) reduce the delay while transfering the warning message from one vehicle to another vehicle. Greenberg's logarithmic model presented vehicular mobility traces and vehicle speed density. CA system transfer periodic messages to driver frequently and our model useful for future Intelligent Transportation System (ITS).

Connected vehicles have been [2] considered as an effective solution to enhance driving safety as they can be well aware of nearby environments by exchanging safety beacons periodically. However, under dynamic traffic conditions, especially for dense-vehicle scenarios, the naive beaconing scheme where vehicles broadcast beacons at a fixed rate with a fixed transmission power can cause severe channel congestion and thus degrade the beaconing reliability.

Mostly, the critical challenge is Wireless Sensor Network (WSN) is congestion control and its avoidance when traffic becomes higher than channel capacity. This can cause high packet loss ratio and less efficiency by degrading the overall network performance[5]. To control the congestion, certain

considerations are needed to detect, avoid and resolve congestion through the network. Finally, the simulation results show that the effective improvements on proposed technique compared to the existing technique.

A mathematical model of queue [5] management on routers interfaces of telecommunication networks. The novelty of this model is the approach to a consistent and coordinate solution of such interface tasks as Congestion Management, Resource Allocation and Congestion Avoidance. These tasks were solved in the course of the optimization problem of quadratic programming.

The frequent movement of mobile terminal in the process of Ad-hoc network data transmission often leads to data loss and then the Vegas algorithm [6] mistakenly thinks that occurred the congestion of the network, resulting in the decline of network communication performance. This paper proposes a congestion avoidance strategies in the improvement of Vegas algorithm, the new algorithm can increase the size of the congestion window in the good performance of the network, when the network is not running well although not block Vegas algorithm error into the congestion avoidance phase, but keeping the congestion window size unchanged, thus keeping previous data transmission rate unchanged, then avoid the network throughput degradation.

B.INTERSECTION COLLISION AVOIDANCE SYSTEM (1-4244-1457-1/08/$25.00 © IEEE)

OVERALL SYSTEM:

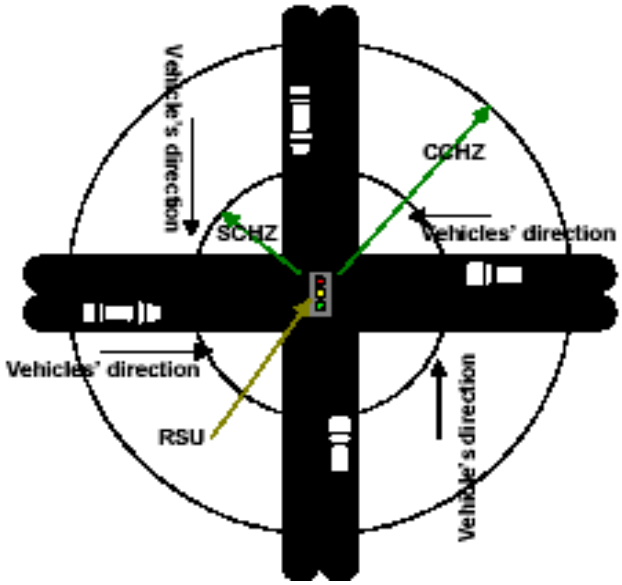

Fig 2 Vechicle Congestion System

DISADVANTAGES:

1. Camera is used to analyse traffic this causes cost load
2. It tries to automize entire transport which is not feasible at any cost. One cannot risk lives just by believing an instrument though any amount of intelligence is added to it.
3. They use a software installed at the signal point to which the vehicles communicate. This gets jammed or loaded heavily when traffic increases. Hence its efficiency decreases on high traffic. This out grades the main purpose of the paper proposal.
4. They also use service and control channels without priority thoughts and this would definitely endanger lives. Service channel may be processed while the emergency information is still waiting in the buffer

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III.PROPOSED SYSTEM METHODOLOGY

A. INFORMATION PASSING-INTERSECTION COLLISION AVOIDANCE SYSTEM:

- We give vehicles the communicating power to communicate within them and avoid accidents mutually.
- As we have mobile towers to help communicate people we have decide to have traffic towers to help communicate vehicles.
- These towers aren't going to be placed miles away as there isn't a need for them away from the road.
- Hence a short range antenna in real time is enough to fulfill the range over the road.
- As there is service range for mobile towers we are going to set up service range for traffic towers. This service range is the range of traffic tower usage.

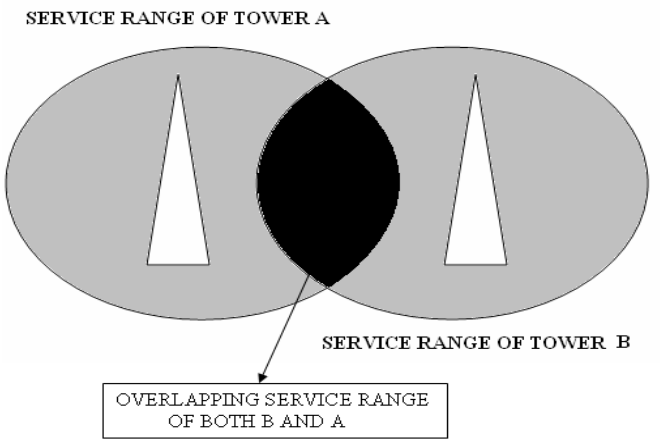

Fig 3 Proposed System Methodology

- Now traffic towers are placed at different locations on the road to receive traffic information from all vehicles entering the service region similar to mobile towers, along the roadside depending on the range it covers.

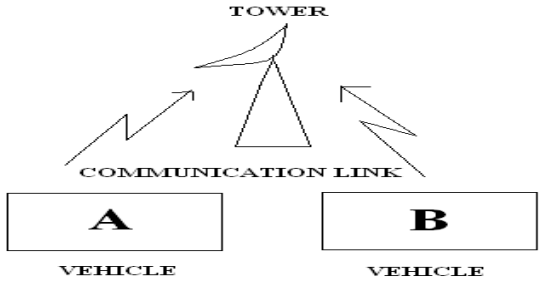

Fig 4 Vechicle Communication

- All the vehicles communicate with each other with the towers as their intermediate node.

B. DRIVER ASSISTANCE SYSTEM:

- The driver is just alarmed on receiving the emergency information from the towers placed along the roads regarding any clashes that may occur.

C. DRIVER HEAD POSITION TRACKING:

- Indicating the driver about all possible collisions may definitely give stress on driving and irritation to him.

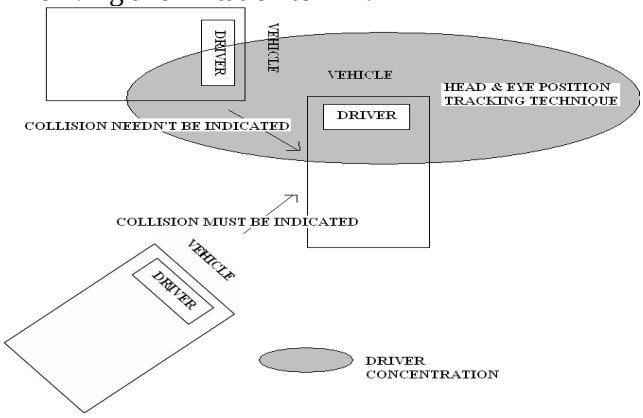

Fig 5 Driver Head Position Tracking System

- Our motto is not "TO AUTOMIZE ENTIRE DRIVING".
- A driver definitely will know driving and we aren't creating a driving kit to replace him.
- This is done by tracking his eye position and almost his head position

- The emergency act that occurs away from his alertness or point of view alone is alarmed to him.

D.LANE DETECTION:

- As already mentioned a range for the vehicle is set to indicate any obstacle in that range.

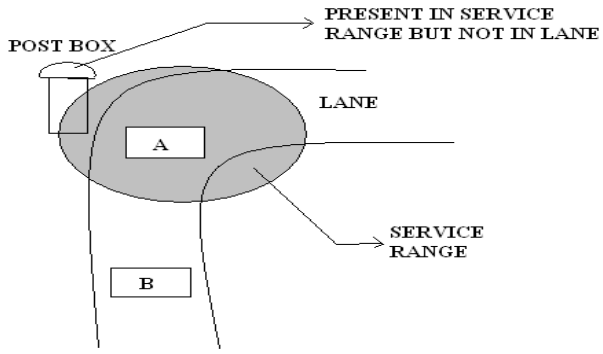

Fig 6 Lane Detection

- It also irritates the driver in his drive.
- Hence lane detection would identify lane curves and any obstacles only from the lane

E. ARTERIAL MANAGEMENT:

- Automatic signalling, by analyzing traffic in the service zone is done. This occurs dynamically than the present timing algorithm.

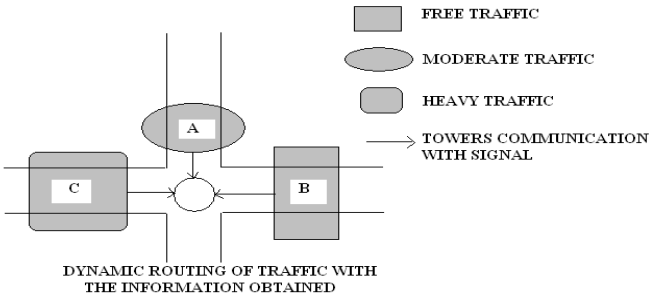

Fig 7 Aterial Management

- At present signals work on the basis of time. Each road is given specific time to wait.
- But in this system as the vehicles communicate their x and y position with the towers which in turn updates it at the server, the servers could easily track out the way to clear traffic using algorithms for it.

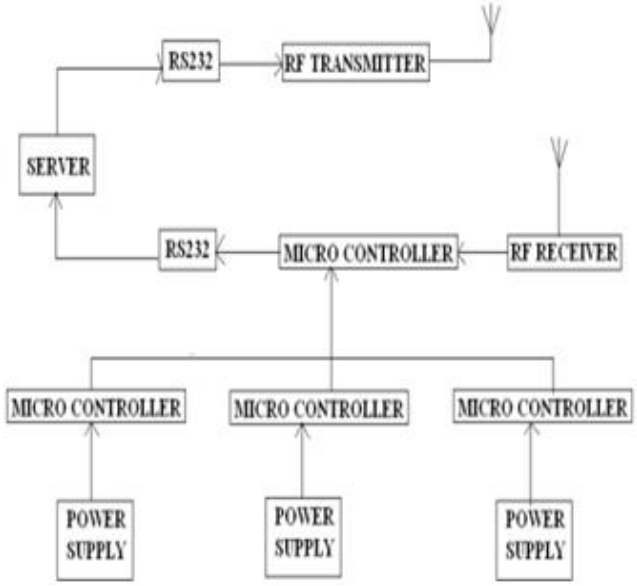

Fig 8 Proposed System

IV.CONCLUSION

One has to contribute any petty amount possible to any little development being an engineer. We consider this to be a small drop in the mighty research work going on. We have received a lot of applause and support all over the nation from many prestigious institutions. Our main focus is to reach public and get more number of queries and support to resolve any flaws in our project that has went unnoticed from us.

V.FUTURE ENHANCEMENT

Future enhancement would depend on the feedback from the public and students. At present after attending conferences and symposiums we have obtained a lot of better ideas and small errors to be rectified in our

project. We have applied for Tamilnadu Student Project Proposal Scheme. If we are sanctioned then it would support us economically to work on a real time basis

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