"Design and Implementation of Smart congestion control system"

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ABSTRACT

The frequent traffic jams at major junctions call for an efficient traffic management system in place. The resulting wastage of time and increase in pollution levels can be eliminated on a city-wide scale by these systems.

The project proposes to implement an intelligent traffic controller using real-time image processing. The image sequences from a camera are analyzed using thresholding method to find the density.

Subsequently, the number of vehicles at the intersection is evaluated and traffic is efficiently managed. The project also proposes to implement a real-time emergency vehicle detection system. In case an emergency vehicle is detected, the lane is given priority over all the others. Hardware control is done by microcontroller.

I. INTRODUCTION

Current traffic control techniques involving magnetic loop detectors buried in the road, infra-red and radar sensors on the side provide limited traffic and require separate systems for traffic counting and for traffic surveillance.

Inductive loop detectors do provide a cost-effective solution, however they are subject to a high failure rate when installed in poor road surfaces, decrease pavement life and obstruct traffic during maintenance and
Infrared sensors are affected to a greater degree by fog than video cameras and cannot be used for effective surveillance.

In contrast, video-based systems offer many advantages compared to traditional techniques.

They provide more traffic information, combine both surveillance and traffic control technologies, are easily installed, and are scalable with progress in image processing techniques.

This project tries to evaluate the process and advantages of the use of image processing for traffic control.

Implementation of our project will eliminate the need of traffic personnel at various junctions for regulating traffic.

Thus the use of this technology is valuable for the analysis and performance improvement of road traffic.

II. BLOCK DIAGRAM

Software deals with the languages like ALP, C, and VB etc., and Hardware deals with Processors, Peripherals, and Memory.

**Memory:** It is used to store data or address.

**Peripherals:** These are the external devices connected

**Processor:** It is an IC which is used to perform some task
III. Applications of embedded systems

- Manufacturing and process control
- Construction industry
- Transport
- Buildings and premises
- Domestic service
- Communications

IV. Basic Principle

A transformer makes use of Faraday's law and the ferromagnetic properties of an iron core to efficiently raise or lower AC voltages. It of course cannot increase power so that if the voltage is raised, the current is proportionally lowered and vice versa.
Advantages:

- Reliability, Ease of Operation
- As we can improve transportation security by implementing it.
- No need of human supervision
- People abiding rules can be caught. Spontaneous output.

V. RELATED WORK

There has been a good deal of work on building multipath transport protocols [13, 27, 18, 12, 14, 6, 23, 7]. Most of this work focuses on the protocol mechanisms needed to implement multipath transmission, with key goals being robustness to long term path failures and to short term variations in conditions on the paths. The main issues are what we discussed in §6: how to split sequence numbers across paths (i.e. whether to use one sequence space for all subflows or one per subflow with an extra connection-level sequence number), how to do flow control (subflow, connection level or both), how to ack, and so forth. Our protocol design in §6 has drawn on this literature. However, the main focus of this paper is congestion control not protocol design. In most existing proposals, the problem of shared bottlenecks (§2.1) is considered but the other issues in §2 are not. Let us highlight the congestion control characteristics of these proposals. pTCP [12], CMT over SCTP[14] and M/TCP [23] use uncoupled congestion control on each path, and are not fair to competing single-path traffic in the general case. mTCP [27] also performs uncoupled congestion control on each path. In an attempt to detect shared congestion at bottlenecks it computes the correlation between fast retransmit intervals on different subflows. It is not clear how robust this detector is. R-MTP [18] targets
wireless links: it probes the bandwidth available periodically for each subflow and adjusts the rates accordingly. To detect congestion it uses packet interarrival times and jitter, and infers mounting congestion when it observes increased jitter. This only works when wireless links are the bottleneck.

VI. SCOPE OF THE PROJECT

The study showed that image processing is a better technique to control the state change of the traffic light. It shows that it can reduce the traffic congestion and avoids the time being wasted by a green light on an empty road. It is also more consistent in detecting vehicle presence because it uses actual traffic images. It visualizes the reality so it functions much better than those systems that rely on the detection of the vehicles’ metal content. Overall, the system is good but it still needs improvement to achieve a hundred percent accuracy

APPLICATIONS:
Main roads, Highways, Signal crossings., Tollgates.

RESULTS
CONCLUSION

We have demonstrated a working multipath congestion control algorithm. It brings immediate practical benefits. Wireless personal area network and wireless sensor networks are rapidly gaining popularity, and the IEEE 802.15 Wireless Personal Area Working Group has defined no less than different standards so as to cater to the requirements of different applications. The ubiquitous home network has gained widespread attentions due to its seamless integration into everyday life. This innovative system transparently unifies various home appliances, smart sensors and energy technologies. The smart energy market requires two types of ZigBee networks for device control and energy management.

ensures that it does not harm other traffic, and that there is always an incentive to turn it on because its aggregate throughput is at least as good as would be achieved on the best of its available paths. It should be beneficial to the operation of the Internet, since it selects efficient paths and balances congestion.

REFERENCES:


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