TRAFFIC INFORMATION SERVICE BASED ON PRIVATE NETWORK

PRATIK KUMAR JHA, PRATEEK SAHU,PRASUN KUMAR KANCHAN

STUDENT,STUDENT,STUDENT

pratikkumar053@gmail.com

prateeksahu5101@gmail.com

prasunk547@gmail.com

ELECTRONICS & TELECOMMUNICATION DEPARTMENT, BHARATH UNIVERSITY

CHENNAI, INDIA

***ABSTRACT*- We propose a traffic information service for which traffic data are collected over ad-hoc networks from nearby vehicles, processed to decrease the data amount , and eventually provided to its target place. The proposed method simply depends on the existing navigation systems in vehicles and wireless communication devices for vehicle to vehicle communications, rather than on a separate established server. It allows collection and analyze the traffic status of large areas without incorporating separate monitored systems, e.g., probe cars and enables to provide accurate traffic information to drivers in timely manner.**

I.INTRODUCTION

The monitoring and control of city traffic is becoming a major problem in several countries. With the increasing number of vehicles on the road, the Authority monitoring traffic has to find new methods of overcoming such a problem. We propose a traffic information service for which traffic data are collected over ad-hoc networks from nearby vehicles, processed to minimize the data amount, and eventually provided to its target place. The proposed scheme simply depends on the existing navigation systems in vehicles and wireless communication devices for vehicle-to-vehicle communication, rather than on a server already setup. It allows collection and analyze the traffic status of large areas without incorporating separated monitoring systems, e.g., find cars and enables to provide accurate traffic information to drivers in timely manner.

II. EXISTING SYSTEM

Present Traffic Light Controllers (TLC) are based on microcontroller and microprocessor. These TLC have various limitations because pre-defined hardware are used , which operates according to the program that does not have the flexibility of modification on real time projects. The fixed time intervals of green, orange and red signals helps us to check whether the waiting time is more.

III.PROPOSED SYSTEM

This project aims at intelligent traffic controller which makes use of Networks along with Embedded Technology. Thus, optimization of traffic light control increases road capacity and traffic flow, and can prevent traffic congestions. This is a unique feature of this project which is very useful to car drivers to take an alternate route in case of congestion.

The main theme for this project is to design a program and implement hardware of intelligent traffic light system suitable for real life implementations.

IV.LITERATURE SURVEY

Title 1: INTRA-VEHICLE ULTRA-WIDEBAND COMMUNICATION TESTBED

Author: WeihongNiu, Jia Li

Abstract: Modern vehicles are increasingly equipped with more sensors which are connected to control units through cables for transmitting crucial real-time sensing data. Reduction in the complexity and cost brought to the automotive design and production by the sensor wiring harness, replacement of wires with wireless links has been proposed .With its fine capability of solving multipath fading and interference resilience, and its freely available spectrum, the ultra-wideband (UWB)technology is considered as a highly promising candidate for such intra-vehicle wireless network. Due to the evaluation of UWB based sensor network, comparing with wired system, from the view of performance and reliability in transmitting automotive sensing data, an UWB communication testbed is needed. Here we present our first attempt in building anintra-vehicle UWB wireless sensor network to transmit automotive speed data from four wheel speed sensors to the electronic control unit (ECU) 1 . Assembly of the testbed consists of ABS motor control simulating system, wheel speed sensors, UWB transmitting nodes and the UWB network coordinator interfacing with ECU. The paper also includes the description of the main testbed software modules and the report of initial observation result. Future observation plan and further work needed to improve the testbed are discussed in the conclusion section.

Title 2: Real Time Traffic Information Service Using TerrestrialDigital Multimedia Broadcasting System

Abstract:The major contribution of this paper is the implementation of real time traffic and traveler information service through the terrestrial digital multimedia broadcasting (T-DMB) system, which are known to be suitable for the mobile data services as well as audio and video services. The implemented system converts the Korean characteristic traffic information into the transport protocol expert group (TPEG) messages, and provides them to the T-DMB system. By testing the service with the TPEG message decoder implemented in the navigation system on PDA and laptop, it has turned out that it can be used as a highly efficient traffic information service system that could be adopted in Korea as well as in European countries.

Title 3: PREPARING TO USE VEHICLEINFRASTRUCTURE INTEGRATION IN TRANSPORTATION OPERATIONS

Abstract: Vehicle infrastructure integration (VII) is an emerging approach intended to create an enabling communication capability to support vehicle-to-vehicle and vehicle-to-infrastructure communications for safety and mobility applications. The Virginia Department of Transportation (VDOT) has been an active participant in the national VII development effort. This research project critically assessed national development activities and quantitatively evaluated two potential VII-enabled system operation applications: traffic monitoring and signal control.

Title 4: Commercial Vehicle Infrastructure Integration

Abstract: Commercial Vehicle Infrastructure Integration(CVII) is a term coined by New York StateDOT to refer to the development, adaptation and application of IntelliDriveSM technology

Using 5.9 GHz dedicated short range communications (DSRC) with a focus on commercial vehicles. The CVII Program develops and tests the exchange of real time information between

IntelliDriveSM compliant roadside infrastructure and vehicles to make safe and secure

Mobility and transportation system asset management. This project has the potential lto improve future safety through crash avoidance

technology. The technology used in this project will focus

on commercial vehicles, but is applicable toanyIntelliDriveSM compliant vehicle. Key features of the CVII project include Driver Identification, Wireless Vehicle Safety Inspection ,and Commercial Vehicle Advisory.

Title 5: Vehicle infrastructure integration system using vision sensors to prevent accidents in traffic flow.

Abstract: This study describes the development of a vision sensor for detecting shock waves which is one of the main factors of accidents in highway traffic flow. The major participations of this research are development of vehicle tracking and detection of shock wave in saturated traffic. Moreover, realisation of a vehicle infrastructure integration (VII) system for providing arrival information of such propagation to drivers is proposed. The experiment on the analysis of the propagation with the developed image sensor has shown that an error might occur in the arrival time information of the propagation provided to the driver. Therefore a prediction technique at the arrival time of the propagation is integrated in the authors' system. By using this prediction technique and taking the error tolerance of drivers into account, the experimental results show that prediction success rates are improved by about 5%.

V.IMPLEMENTATION

Modules:

Power Supply Unit

Microcontroller Unit.

Communication Unit.

Display Unit.

Software Unit

Power Supply Unit

The supply of 5V DC is given to the system which is converted from 230V AC supply. Firstly, the step down transformer is used here for converting the 230V AC into 12V AC. The microcontroller supports only the DC supply, so the AC supply gets converted into DC using the bridge rectifier. The output of the rectifier have ripples so we are using the 2200uf capacitor for filtering those ripples. The output from the filter is provided to the 7805 voltage regulator which will convert the 12V DC into 5V DC. The output from the regulator gets filtered using the 1000uf capacitor, so the pure 5V DC is provided as the output from the power supply unit. Here we are using the 8051 microcontroller which will be capable of getting the supply of 5V DC so we have to convert the 230V AC supply into 5V DC supply.

Microcontroller Unit

- 8051 Microcontroller:

In this project we are using the 8051 microcontroller for controlling the devices which are all connected with the same. In CAR A, CAR B, CAR C section we are using the 8051 microcontroller. The controller is connected with the Zigbee transceiver, MAX232, keys, and LCD. When the user press the key for intimating the traffic information, the information will be transmitted to the collecting centre via Zigbee, the information will be received by the Zigbee transceiver and then again transmitted to the nearby cars.

Communication Unit

Communication unit will send or receive the data from the microcontroller.

- Zigbee:

In this project Zigbee is connected with the tx and rx pin of the microcontroller. Zigbee is used to send the information from the collecting centre node to the car section. The traffic information will be sent to the car section via Zigbee

- MAX232:

MAX232 is used to interface the Zigbee with the microcontrollers to convert the voltage levels. It will convert the voltage level into TTL logic which is compatible to the microcontroller.

Display Unit

- LCD:

Liquid Crystal Display (LCD) is used as the displaying device. Here we are using the 2X16 LCD which is capable of accessing the data in four bits as well as eight bits also. In this project we are going to display the traffic density in every vehicle.

Software Unit:

Software is used to compile the coding of the desired application for the corresponding embedded system.

- KEIL uvision3:

This is the embedded C compiler which is compatible for the 8051 microcontroller to compile the code.

Keil Software makes C compilers, macro assemblers, real-time kernels, debuggers, simulators, integrated environments, and evaluation boards for the 8051, 251, ARM, and XC16x/C16x/ST10 microcontroller families.

VI.CONCLUSION

This paper provides an effective way to control the traffic using the wireless status transmission through the different cars in different road ways. Hence this system provides the best method to control the traffic.

In our Approach we design a system with information sharing system where the system will be present in all the cars which will be connected to information system to know about the status of the traffic. In this system we may add even busses and other vehicles to maintain the smooth traffic.

VII.REFERENCES

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