INTERNATIONAL JOURNAL OF RESEARCH
In Advanced Engineering Technologies

Volume 5, Issue 1 OCT 2015

CONTROLLING OF VEHICULAR SPEED USING WI-FI TECHNOLOGY

K.MALLAIAH [1,] **B.NAGAVENI** [2]
[1] mallaiah431@gmal.com [2]bnagaveni@gmal.com

[1] PG Scholar, Dept of Ece, Aurobindo institute of engineering and technology, sheriguda (v), Ibrahimpatanam Mandal, Rangareddy Dist, Telangana, India.

[2] Guide M.Tech, Assistant professor, Dept Of Ece, Aurobindo institute of engineering and technology, sheriguda (v) ,Ibrahimpatanam Mandal, Rangareddy Dist, Telangana, India.

Abstract: Vehicular communication is a popular topic in the academia and the car industry. The aim of these growing interest is to develop an effective communication system for the Intelligent Transportation System (ITS). In this paper we presented the model of wireless base station good put evaluation. We used wireless access point model as a queuing system with variable requests and the auto traffic model. The performance of the wireless networks can be impacted from a variety of parameters, such as radio communication range, available bandwidth and bit rate, the number of clients in wireless network range and vehicle speed. The basic parameters were analysed and presented in this paper.

Key words: *ZigBee, wifi,Ir sensors,smoke sensor*

I. Introduction

The needs to enhance road safety, traffic efficiency and to reduce environmental impact of road transport are serious change for both academics and industry. Researchers are greatly interested to develop vehicular communication and networking technology in two realistic ways vehicle to vehicle (V2V) in ad hoc mode and vehicle to infrastructure (V2I) with fixed nodes along the road. The potency to exchange information wireless via V2X is a foundation stone for building powerful Intelligent Transport Systems (ITS). In Europe, USA and Japan are great efforts made from automakers and governments to reach single standards through the several and common projects such as CAR 2 CAR Communication Consortium, Vehicle Safety Communication Consortium, EUCAR SGA etc. Result from common effort is an international standard, IEEE802.11p malso known as Wireless Access for Vehicular Environments (WAVE). This standard will be used as the groundwork for Dedicated Short Range Communications (DSRC). This type of communication has potential to improve safety on the road, traffic flow and provide comfort for passengers and drivers with expedited applications such as INTERNET, network games, automatic electronic toll collection, drive-through payments, digital map update, wireless diagnostic and flashing etc. DSRC is the one step in the future, because it lets inter-vehicle and vehicle to infrastructure wireless communication.Wireless networking based on IEEE802.11 technology it has recently become popular and broadly available at low-cost for home networking and free Wi-Fi or commercial hotspots. The DSRC starting idea was to equip vehicular network nodes with off-the-shelf wireless technology such as IEEE802.11a. This technology is cost effective and has potential to grow and new versions have been recently produced. The latest standard of wireless local area network (WLAN) is IEEE802.11.The IEEE 802.11n standard promises to improve and extend most popular WLAN standards by significantly increasing throughput, reliability and reach. Nowadays dispositions of WLAN-based access technology is predominantly to stationer indoor and outdoor users who are most slowly moving and in range limited. Despite the fact that the standard has not been developed for fast dynamic usage, nothing limits it to be evaluated for vehicular communication systems. The motivation is to understand the interaction between the vehicle speed and goodput of WLAN-based network.

II. The Hardware System

Micro controller: This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

ARM7TDMI: ARM is the abbreviation of Advanced RISC Machines, it is the name of a class of processors, and is the name of a kind technology too. The RISC instruction set, and related decode mechanism are much simpler than those of Complex Instruction Set Computer (CISC) designs.

Liquid-crystal display (**LCD**) is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.

III. Design of Proposed Hardware System

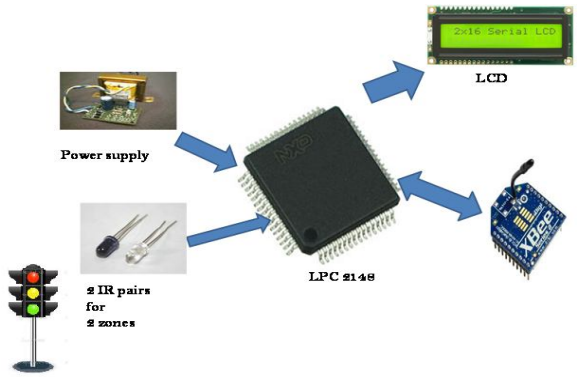


Fig.1.Block diagram

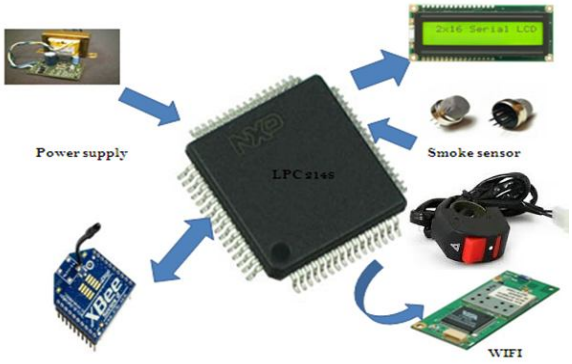
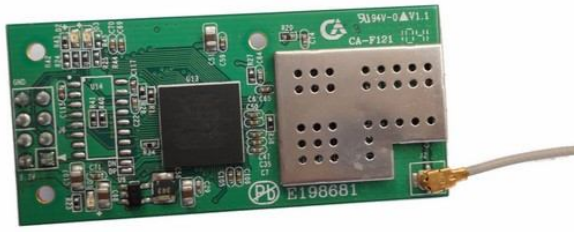


Fig.2.Block diagram

The design of entire system consisted of two part which are hardware and software. The hardware is designed by the rules of embedded system, and the steps of software consisted of three parts. The existing method by improving the security level by implantation of ETHERNET that will solve this problem. WIFI based wireless technology which consists of transmitter at the site location and receiver at control panel. Information received at the receiver will be send to the ETHERNET. So the people living at home with internet connection can see the received data. The system uses a compact circuitry built around LPC2148 (ARM7) microcontroller Programs are developed in Embedded C. Flash magic is used for loading programs into Microcontroller.

IV.Board Hardware Resources Features

Wifi



VSD03 is the new third-generation embedded Uart Wifi modules studied by VSDTECH. Uart-Wif is an embedded module based on the Uart serial,according with the WiFi wireless WLAN standards, It accords with IEEE802.11 protocol stack and TCP / IP protocol stack， and it enables the data conversion between the user serial and the wireless network module. through the Uart-Wifi module, the traditional serial devices can easily access to the

wireless network. The module supports quick networking by specifying channel number. In the usual course of wireless networking, devices would first scan automatically on the current channel, in order to search for the network(or Ad hoc) built by the target AP. This module provides working channel configuration,when the channel of the target network is known, users can specify the working channel directly, the networking time will be reduced from 2 seconds to about 300 milliseconds,then quick networking is achieved.

Zigbee

Zigbee modules feature a UART interface, which allows any microcontroller or microprocessor to immediately use the services of the Zigbee protocol. All a Zigbee hardware designer has to do in this ase is ensure that the host's serial port logic levels are compatible with the XBee's 2.8- to 3.4-V logic levels. The logic level conversion can be performed using either a standard RS-232 IC or logic level translators such as the 74LVTH125 when the host is directly connected to the XBee UART. The below table gives the pin description of transceiver. Data is presented to the X-Bee module through its DIN pin, and it must be in the asynchronous serial format, which consists of a start bit, 8 data bits, and a stop bit. Because the input data goes directly into the input of a UART within the X-Bee module, no bit inversions are necessary within the asynchronous serial data stream. All of the required timing and parity checking is automatically taken care of by the X-Bee's UART

Ir sensor

The TSOP21.. - series are miniaturized receivers forinfrared remote control systems. PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter.The demodulated output signal can directly bedecoded by a microprocessor. The main benefit is the operation with short burst transmission codes and high data rates. Photo detector and preamplifier in one package

• Internal filter for PCM frequency
• Improved shielding against electrical field disturbance
• TTL and CMOS compatibility
• Output active low
• Low power consumption
• High immunity against ambient light

The circuit of the TSOP21.. is designed in that way that unexpected output pulses due to noise or disturbance signals are avoided. A bandpass filter, an integrator stage and an automatic gain control are usedto suppress such disturbances.The distinguishing mark between data signal and disturbance signal are carrier frequency, burst lengthand duty cycle.

Smoke Sensor

Smoke sensor is used to detect any leakage of smoke and any hazardous gases such that an alarm can be initiated to avoid any damages in the industries. These sensors are also used in many applications like corporate and in any office work areas these are linked to fire alarms.And buzzers through the micro-controller. Ionization detectors have an ionization chamber and a source of ionizing radiation. The source of ionizing radiation is a minute quantity of americium-241 (perhaps 1/5000th of a gram), which is a source of alpha particles (helium nuclei). The ionization chamber consists of two plates separated by about a centimeter. The battery applies a voltage to the plates, charging one plate positive and the other plate negative. Alpha particles constantly released by the americium knock electrons off of the atoms in the air, ionizing the oxygen and nitrogen atoms in the chamber. The positively-charged oxygen and nitrogen atoms are attracted to the negative plate and the electrons are attracted to the positive plate, generating a small, continuous electric current. When smoke enters the ionization chamber, the smoke particles attach to the ions and neutralize them, so they do not reach the plate. The drop in current between the plates triggers the alarm.

V. Conclusion

In this article was presented field trial evaluations together with theoretical analyses of the IEEE802.11n standard comparing with legacy standard in the vehicle environment. The trial field test was performed in the context of simple scenario of one vehicle and access point. At various velocities has been testing the performance of WLAN. Wireless network link under fluent number of vehicles

respectively active users simultaneously realizing such field trials for goodput evaluation is very difficult and costly. Therefore a simple mathematical model for goodput evaluation of vehicular communication systems in V2I scenario was presented and analysed for understanding the basic processes in wireless data networks prior to conducting larger field trials. We mark that while number of necessary real time application of vehicular networks are the dissemination of safety and traffic condition messages, we can assume WiFi for vehicle communication systems in the near future will also be requested to provide different applications, for e.g. web browsing, video streaming, VoIP, downloading files, WiFi radio, etc. These types of applications have a requirement for high throughput during connections to the access point and existing mobile communication systems except WLAN aren't able to provide growing needs. And it is also important to note that the results were showing her serve as information for future analysis and design of vehicle networking systems

VI. REFERENCES

[1] "Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications Amendment 6: Wireless Access in Vehicular Environments",http://ieeexplore.ieee.org/servlet/opac?punumber=5514473, IEEE, 15.July, 2010.

[2] IEEE 802.11, The Working Group for WLAN Standards, http://grouper.ieee.org/groups/802/11/ , April, 2006.

[3] "Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications Amendment 5: Enhancements for Higher Throughput",http://ieeexplore.ieee.org/servlet/opac?punumber=530729, IEEE, 29. October, 2009.

[4] J. P.Singh, N. Bambos, B. Srinivassan and D. Clawin, Wireless LAN performance under varied stress conditions in vehicular traffic scenarios, proceedings of Vehicular Technology Conference, 2002, Vol. 2, pp. 24-28.

[5] J. Ott, D. Kutscher, "Drive–thru Internet: IEEE 802.11b for Automobile Users", IEEE Infocom, Hong Kong, 2004.

[6] R. Gass, J. Scott, C. Diot, "Measurements of In–Motion 802.11 Networking", WMCSA '06. Proceedings, 2006, pp. 69-74.

[7] M. Wellens, B. Westphal, P. Mähönen "Performance Evaluation of IEEE 802.11–based WLANs in Vehicular Scenarios", Proc. VTC Spring, 2007. pp. 1167–1171.

[8] M. Rubinstein, F. Ben Abdesslem, S. Rodrigues Cavalcanti, M. Elias Mitre Campista, R. Alves dos Santos, L. Costa, M. Dias de Amorim, O. Duarte, "Measuring the capacity of in–car to in–car vehicular networks" IEEE Communications Magazine, Vol. 47., Iss. 11, 2009., pp. 128–136.

[9] P. Richards Shock waves on the highway. Operations Research 4, 1956, 42–51.

[10] M. Lighthill and G. Whitham "On kinematic waves: II. A theory of traffic on long crowded roads." Proc. Roy. Soc. of London A 229, 1955, pp 317–345.

[11] B. Kerner and P. Konhauser, "Structure and parameters of clusters in traffic flow", Physical Review E 50, 1994, pp 54–83.

[12] M. Treiber, A. Hennecke, and D. Helbing, "Derivation, properties, and simulation of a gas-kinetic-based, non-local traffic model", Physical Review E 59, 1999, pp 239–253.

[13] B.S.Kerner "Introduction to Modern Traffic Flow Theory and Control" Publisher: Springer, 2009. –p.265

[14] S. Krauss "Microscopic Modeling of Traffic Flow: Investigation of Collision Free Vehicle Dynamics", Ph.D. Thesis. – University of Cologne, Cologne, Germany. 1997.

[15] M. Fiore, J. Härri, F.Filali, C. Bonnet "Understanding Vehicular Mobility for Network Simulation", Proc. of the 1st IEEE Workshop on Mobile Vehicular Networks (MoVeNet'07). – Pisa, Italy, 2007.

[16] M. Treiber, A. Hennecke, and D. Helbing, "Congested traffic states in empirical observations and microscopic simulations", Physical Review E, 62. 2000. pp. 1805–1824.

[17] A. Matsumoto, K. Yoshimura, S. Aust, T. Ito, Y. Kondo, "Performance evaluation of IEEE 802.11n devices for vehicular networks," LCN 2009, The 34th Annual IEEE Conference on Local Computer Networks, LCN 2009, 20-23 October 2009, Zurich, Switzerland, Proceedings, 2009, pp 669-670.

[18] M. F. Lin, L. Lin, J. Y. Tzu, H. M. Lee, "The IEEE802.11n Capability Analysis Model Based on Mobile Networking Architecture" SMC 2009, pp. 1857-1860.

[19] Jansons J., Doriš T. "Analyzing IEEE 802.11n Standard: Outdoor Performance", The Second International Conference on Digital Information Processing and Communications (ICDIPC2012): Proceedings, Lithuania, Klaipeda, 2012, pp.26-30.

[20]Website:http://www.sharpened.net/glossary/definition/goodpt , updated 13. July, 2010.

[21] Kleinrock L., Gail R. Queueing Systems: Problems and Solutions. – John Wiley & Sons, 1996. – 227 p.

.