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VEHICLES WIRELESS COMMUNICATION SYSTEM

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ABSTRACT

Vehicular communication (VC) systems will enable many exciting applications that will make driving safer, more efficient and more comfortable. But this necessitates the introduction of security and privacy enhancing mechanisms. In this paper we focus on practical aspects associated with the implementation and deployment of such a secure VC system. We also provide an outlook to future research challenges.

KEYWORDS: Vehicular communication (VC), WI-FI, KEIL **.**

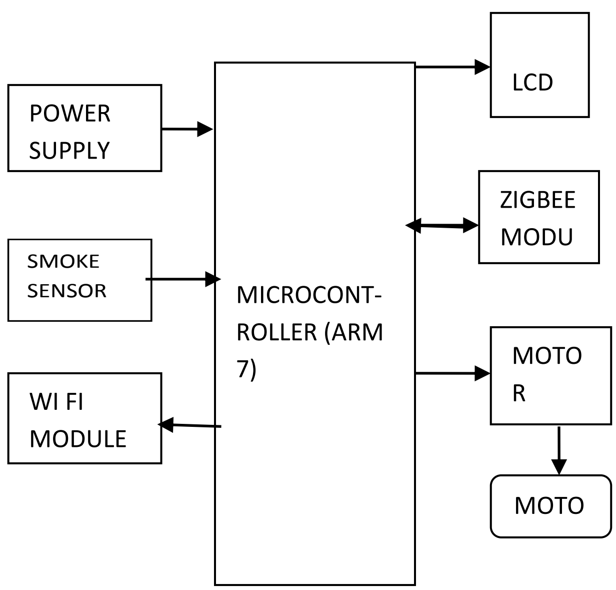
INTRODUCTION

The objective of the paper is to present a conceptual model of a microcontroller based variable electronic speed governor that can be implemented to control the speed of any vehicle depending on the local speed limit. The circuit is cost effective, efficient and easy to implement on already existing vehicles. Every city, town or a village, can be marked and divided into individual zones. The division depends upon the area under which the business, residential, and industrial regions come under. The central business district being a very busy traffic zone demands the least speed limit, with the residential and industrial zones having lesser traffic densities, the speed limits will vary accordingly.

Consider a city or town can be divided into physical zones which are classified according to different speed ranges. A transmitter is placed at all exit and entry points of the interface of zone that transmits a message signal at carrier frequency, indicating the upper limit value of the zone speed range into which the vehicle is entering at that moment, to the receiver which gives the message as an input to a preprogrammed MICROCONTROLLER embedded within the automobile which compares the speed of the vehicle measured by a sensor at the maximum allowable speed and automatically regulates the speed of the vehicle. The speed of the vehicle can be varied by varying the "duty cycle" of the pulse input. The entire system is a low cost variable electronic speed governor, small in size and easy to assemble onto an existing vehicle without disturbing its present arrangement.

BLOCK DIAGRAM

The Block diagram consists of a GPS modem, a Zigbee tranceiver, Keypad, a Micro controller, an LCD Display and power supply. These hardware components will be discussed briefly as follows:



Microcontroller Section: 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.

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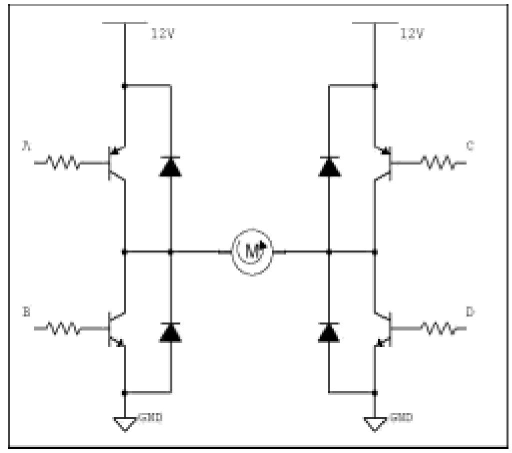
Power supply: In this project we required operating voltage for ARM controller board is 12V. Hence the 12V D.C. power supply is needed for the ARM board . This regulated 12V is generated by stepping down the voltage from 230V to 18V now the step downed a.c voltage is being rectified by the Bridge Rectifier using 1N4007 diodes. The rectified a.c voltage is now filtered using a 'C' filter. Now the rectified, filtered D.C. voltage is fed to the Voltage Regulator. This voltage regulator provides/allows us to have a Regulated constant Voltage which is of +12V. The rectified; filtered and regulated voltage is again filtered for ripples using an electrolytic capacitor 100µF. Now the output from this section is fed to microcontroller board to supply operating voltage.

LCD Display Section: This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information.

Zigbee transceiver: Transceiver is a device which acts as both transmitter and receiver. This operates with 2.8-3.4V. Range of the transceiver module is 30-70m in urban areas and 1-1.5km in outdoor (LOS). The transceiver has an on-chip wire antenna and it operates at a frequency of 2.4GHz.The data received from the microcontroller is organized based on the ZIGBEE protocol standards and then modulated. Along with the data, source address and destination address are added and sent.

Photo diode IR: The IR LED is used as the IR transmitter, which is connected by using the resistor logic as shown in the schematic. The IR receiver is connected by using the transistor logic whose collector is connected to the base of the transistor. The base of the transistor is connected to the photo diode through the resistor.

L293D Motor Driver IC: Since two motors are used to drive The back wheels of the robot independently, there is a need for Two H-bridges. Instead of implementing the above H-bridge controlCircuit twice, an alternative is to use an integrated circuit (IC), which Provides more than one H-bridges. One such IC is L293D, which has 2 H-Bridges in it. It can supply 600*Ma* continuous and 1.2*A* peak Currents. It is suitable for switching applications up to 5 *kHz*. These Features make it ideal for our application. Another option is to use IC L298, which can drive 2*A* continually and 3*A* peak currents. The Diagram of L293D is shown in Figure 2It can be observed from the figure that L293D has a similar configuration to the circuit in



DC geared motor: High efficiency, high quality low cost DC motor with gearbox for robotics applications. Very easy to use and available in standard size. Nut and threads on shaft to easily connect and internal threaded shaft for easily connecting it to wheel.

Features

- 45 RPM 12V DC motors with Gearbox
- 5kgcm torque
- 3000RPM base motor
- 6mm shaft diameter with internal hole
- 125gm weight
- Same size motor available in various rpm
- No-load current = 60 mA(Max), Load current = 300 mA(Max)

WI FI modul: Wi-Fi (*wireless fidelity*) is the general term for any type of IEEE 802.11 network . Examples of 802.11 networks are the 802.11a (up to 54 Mbps), 802.11b (up to 11 Mbps), and 802.11g (up to 54 Mbps). These networks are used as WLANs. The three 802.11 standards differ for the offered bandwidth, coverage, security support and, therefore, the kind of applications supported. 802.11a is better suited for multimedia voice, video and large-image applications in densely populated user environments. However, it provides relatively shorter range than 802.11b, which consequently requires fewer access points for coverage of large areas. The 802.11g standard is compatible with and may replace 802.11b, partly due to its higher bandwidth and improved security.

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Regulator: Voltage regulator ICs is available with fixed (typically 5, 12 and 15V) or variable output voltages. The maximum current they can pass also rates them. Negative voltage regulators are available, mainly for use in dual supplies. Most regulators include some automatic protection from excessive current ('overload protection') and overheating ('thermal protection'). Many of the fixed voltage regulator ICs have 3 leads and look like power transistors, such as the 7805 +5V 1A regulator shown on the right. The LM7805 is simple to use. You simply connect the positive lead of your unregulated DC power supply (anything from 9VDC to 24VDC) to the Input pin, connect the negative lead to the Common pin and then when you turn on the power, you get a 5 volt supply from the output pin.

Fig .A Three Terminal Voltage Regulator

78XX: The Bay Linear LM78XX is integrated linear positive regulator with three terminals. The LM78XX offer several fixed output voltages making them useful in wide range of applications. When used as a zener diode/resistor combination replacement, the LM78XX usually results in an effective output impedance improvement of two orders of magnitude, lower quiescent current. The LM78XX is available in the TO-252, TO-220 & TO-263packages,

Features:

• Output Current of 1.5A

• Output Voltage Tolerance of 5%

• Internal thermal overload protection

• Internal Short-Circuit Limited

• No External Component

• Output Voltage 5.0V, 6V, 8V, 9V, 10V, 12V, 15V, 18V, 24V

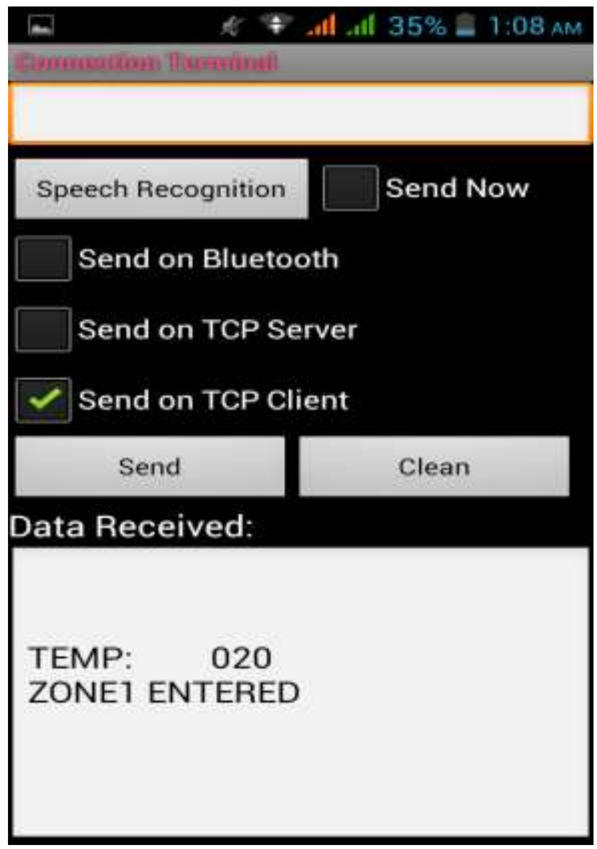
• Offer in plastic TO-252, TO-220 & TO-263

• Direct Replacement for LM78XX

RELATED WORK

We are successfully complete this project . There are two zone .city or town can be divided into physical zones which are classified according to different speed ranges. When car come in this zone area ,then car reducing speed without any driver in car. There are two types display –a) lcd display b) mobile phone .we have already android apps download in your mobile

1). When car enter in zone 1:- Reducing speed



2).when car exite in zone 1: - car running norma l speed

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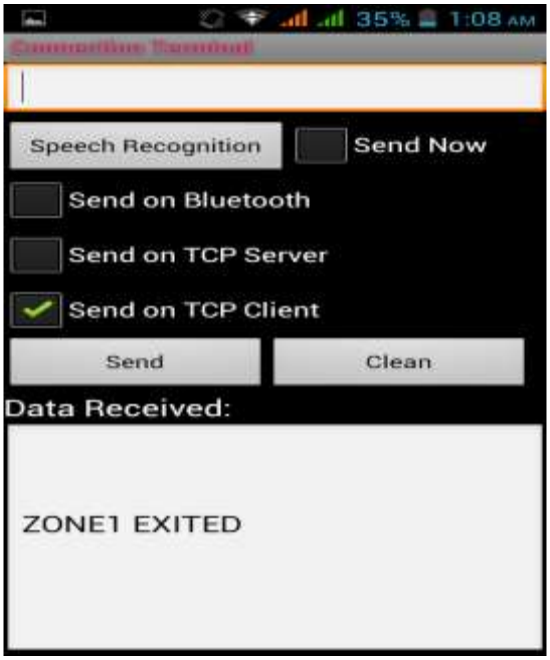
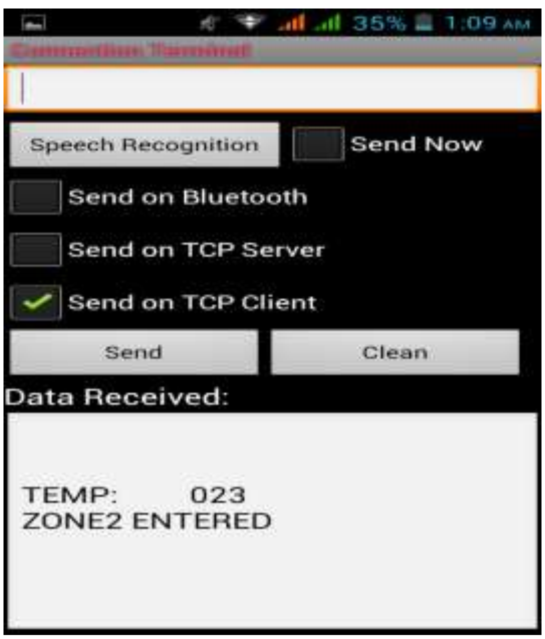
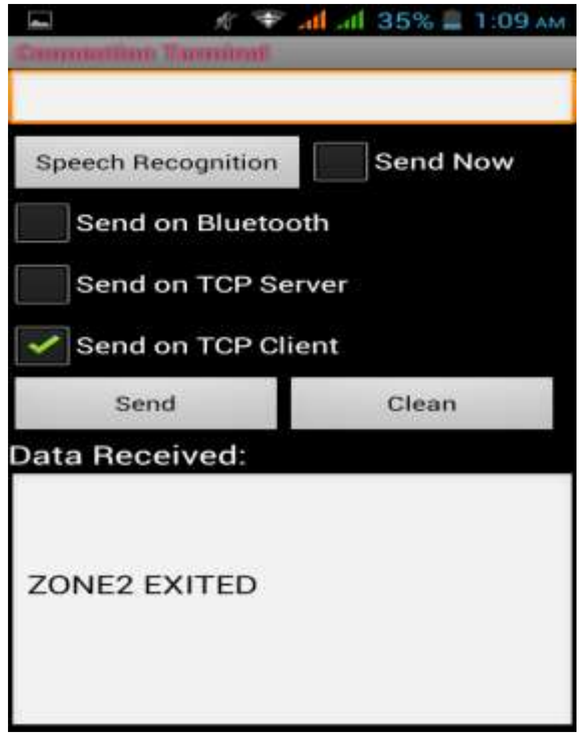


3).When car enter in zone 2:- Reducing speed



4). when car exite in zone 2: - car running normal speed



SOFTWARE DESCRIPTION

About keil software: It is possible to create the source files in a text editor such as Notepad, run the Compiler on each C source file, specifying a list of controls, run the Assembler on each Assembler source file, specifying another list of controls, run either the Library Manager or Linker (again specifying a list of controls) and finally running the Object-HEX Converter to convert the Linker output file to an Intel Hex File. Once that has been completed the Hex File can be downloaded to the target hardware and debugged. Alternatively KEIL can be used to create source files; automatically compile, link and covert using options set with an easy to use user interface and finally simulate or perform debugging on the hardware with access to C variables and memory. Unless you have to use the tolls on the command line, the choice is clear. KEIL Greatly simplifies the process of creating and testing an embedded application.

Projects: The user of KEIL centers on "projects". A project is a list of all the source files required to build a single application, all the tool options which specify exactly how to build the application, and – if required – how the application should be simulated. A project contains enough information to take a set of source files and generate exactly the binary code required for the application. Because of the high degree of flexibility required from the tools, there are many

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options that can be set to configure the tools to operate in a specific manner. It would be tedious to have to set these options up every time the application is being built; therefore they are stored in a project file. Loading the project file into KEIL informs KEIL which source files are required, where they are, and how to configure the tools in the correct way. KEIL can then execute each tool with the correct options. It is also possible to create new projects in KEIL. Source files are added to the project and the tool options are set as required. The project can then be saved to preserve the settings. The project is reloaded and the simulator or debugger started, all the desired windows are opened. KEIL project files have the extension

Simulator/Debugger: The simulator/ debugger in KEIL can perform a very detailed simulation of a micro controller along with external signals. It is possible to view the precise execution time of a single assembly instruction, or a single line of C code, all the way up to the entire application, simply by entering the crystal frequency. A window can be opened for each peripheral on the device, showing the state of the peripheral. This enables quick trouble shooting of mis-configured peripherals. Breakpoints may be set on either assembly instructions or lines of C code, and execution may be stepped through one instruction or C line at a time. The contents of all the memory areas may be viewed along with ability to find specific variables. In addition the registers may be viewed allowing a detailed view of what the microcontroller is doing at any point in time

CONCLUSION

The project "WI-FI for vehicular communication systems" has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit.

Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

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