

Zonal Based Controlled Vehicle

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Abstract- Nowadays people are driving very fast due to which accidents are occurring frequently, we lost our valuable life by making small mistake while driving (school zone, hills area, and highways). So in order to avoid such kind of accidents and to alert the drivers and to control their vehicle speed in such kind of places the highway department have placed the signboards. But sometimes it may be possible to view that kind of signboards and there is a chance for accident. Developed a system so to intimate the driver about the zones and the speed limit automatically, is done by means of using RF technology and by controlling embedded system called ARM controller. The main objective is to design a Smart Display controller meant for vehicle's speed control and monitors the zones, which can run on an embedded system.

Keywords- ARM7, RF, voice module.

I. INTRODUCTION

Road facilities are a major concern in the world. Due to this, serious accidents are associated with excessive or inappropriate speed, as well as changes in the roadway (like the presence of roadwork). So that in order to reduce these accidents and mitigation of their consequences are a big concern for traffic authority persons and transport research people. One important action consists of advanced driver assistance systems (ADAS), which are acoustic, haptic or visual signals produced by the vehicle itself to communicate to the driver the possibility of a collision may occur. These actions are somewhat available in commercial vehicles today, and future trends indicate that automatic driving controls and a growing number of sensors on both the road infrastructure and the vehicle itself will achieve higher safety. A prime example of driver assistance systems is cruise control (CC), which has the capability of maintaining a constant user preset speed and its evolution, the adaptive cruise control (ACC), which adds to CC the capability of keeping a safe distance from the preceding vehicle. A drawback of these systems, is that they are independently capable of distinguishing between straight and curved paths of the road, in order to reduce the speed to avoid accidents. However, when the vehicle velocity is not sufficient while using digital roadmap with a combination of Global Positioning System containing information about the speed limits. However useful, these systems are inoperative in case of unexpected road circumstances (like roadwork, road diversions etc.), where the system needs the use of digital display maps to guide the driver while driving the vehicle. Here we are using the Radio

Frequency Identification (RFID) technology to tag the warning signals placed in the dangerous path of the road. While duplicate vision-based authority of traffic signals might fail if visibility is poor because of difficult weather conditions or blocking of the line of sight by preceding vehicles, RF signals until now transmitted efficiently. In the last years, RFID technology has been gradually associated to commercial transportation system. A known example for the system is the RFID-based NH toll collection system, which are now employed in many countries, like the Telepass system in Italy, or the Auto pass system in Norway. It also uses the monitoring system to avoid the vehicle robbery, access to control the theft in private areas and embedding of RFID tags in license plates with specially coded IDs for automatic vehicle detection and identification. The requirement of RFID tag on the road path have been proposed in order to provide accurate vehicle localization in tunnels or downtown areas where GPS positioning might be unreliable. In the work by RFID, tagging of cars was offered as an alternative to traffic data collection by inductive loops placed under the road surface.

II. LITERATURE SURVEY

The main motive behind this paper is to scale back these reckless accidents that we tend to propose a system that governs and controls the speed of the vehicle with none direct inconvenience to the motive force. There are instances wherever the speed of the auto is on the far side the expected ordinance or the motive force doesn't adapt the traffic signals, so we tend to be using RF technology.

We researched lots over that RF module to be used and came to the conclusion that passive tags wouldn't be feasible because it cannot store multiple IDs and features a comparatively less variety so we tend to be exploitation active RF module TWS 434 and RWS 434 for our planned system. The module features a variety of five hundred meters and fits among our application variety. The basic ARM family of microcontroller is enough for our application and so we tend to be exploitation lpc2148 Microcontroller that has four ports, 2 are used for Input and therefore the rest two for output. At the start we tend to determine to use 2 motors for our application but the planned system works well on just one motor. We tend to be employing a three hundred watt motor that is driven by Motor driver L293D. Our system needs speed to be displayed and that we are exploitation 16x2 alphanumeric display screen beside RF module to determine the speed.

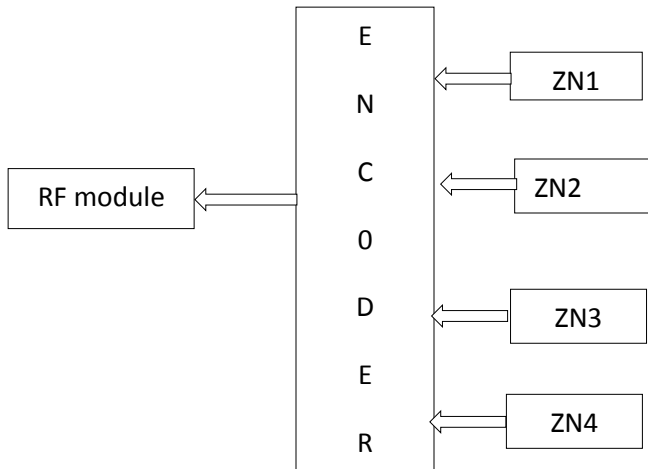
BLOCK DIAGRAM:

Fig. Antenna Section

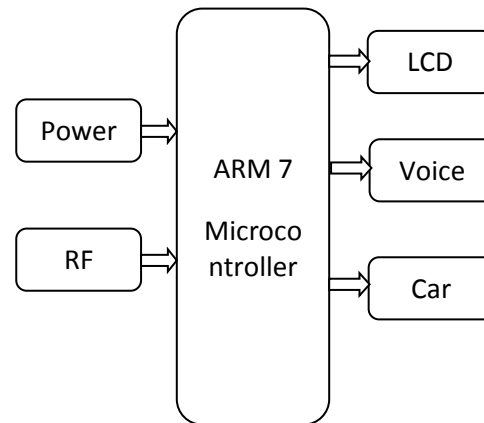


Fig. Vehicle control setup section

III. SYSTEM HARDWARE**LPC2148 Processor:**

LPC2148 Microcontroller Architecture. The ARM7TDMI-S is a general purpose 32-bit microprocessor, which offers high performance and very low power consumption. The ARM architecture is based on Reduced Instruction Set Computer (RISC) principles, and the instruction set and related decode mechanism are much simpler than those of micro programmed Complex Instruction Set Computers (CISC). This simplicity results in a high instruction throughput and impressive real-time interrupt response from a small and cost-effective processor core.

Pipeline techniques are employed so that all parts of the processing and memory systems can operate continuously. Typically, while one instruction is being executed, its successor is being decoded, and a third instruction is being fetched from memory. The ARM7TDMI-S processor also employs a unique architectural strategy known as Thumb, which makes it ideally suited to high-volume applications with memory restrictions, or applications where code density is an issue.

The key idea behind Thumb is that of a super-reduced instruction set. Essentially, the ARM7TDMI-S processor has two instruction sets:

- The standard 32-bit ARM set.
- A 16-bit Thumb set.

L293D

L293D is a dual H-bridge motor driver integrated circuit (IC). Motor drivers act as current amplifiers since they take a low-current control signal and provide a higher-current signal. This higher current signal is used to drive the motors. L293D contains two inbuilt H-bridge driver circuits. In its common mode of operation, two DC motors can be driven

simultaneously, both in forward and reverse direction. The motor operations of two motors can be controlled by input logic at pins 2 & 7 and 10 & 15. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anticlockwise directions, respectively.

DC motor:

DC motors are configured in many types and sizes, including brush less, servo, and gear motor types. A motor consists of a rotor and a permanent magnetic field stator. The magnetic field is maintained using either permanent magnets or electromagnetic windings..Motors are the devices that provide the actual speed and torque in a drive system. This family includes AC motor types (single and multiphase motors, universal, servo motors, induction, synchronous, and gear motor) and DC motors (brush less, servo motor, and gear motor) as well as linear, stepper and air motors, and motor contactors and

Voice module

Today's consumers demand the best in audio/voice. They want crystal-clear sound wherever they are in whatever format they want to use. APLUS delivers the technology to enhance a listener's audio/voice experience.



Fig. voice module

The aPR33A series are powerful audio processor along with high performance audio analog-to-digital converters (ADCs) and digital-to-analog converters (DACs). The aPR33A series are a fully integrated solution offering high performance and unparalleled integration with analog input, digital processing and analog output functionality. The aPR33A series incorporates all the functionality required to perform demanding audio/voice applications. High quality audio/voice systems with lower bill-of-material costs can be implemented with the aPR33A series because of its integrated analog data converters and full suite of quality-enhancing features such as sample-rate convertor.

IV. WIRELESS COMMUNICATION

RF communication:

Radio Frequency, any frequency within the electromagnetic spectrum associated with radio wave propagation. When an RF current is supplied to an antenna, an electromagnetic field is created that then is able to propagate through space. Many wireless technologies are based on RF field propagation

RF Transmitter

The TWS-434 extremely small, and are excellent for applications requiring short-range RF remote controls. The transmitter output is up to 8mW at 433.92MHz with a range of approximately 400 foot (open area) outdoors. Indoors, the range is approximately 200 foot, and will go through most walls. The TWS-434 transmitter accepts both linear and digital inputs can operate from 1.5 to 12 Volts-DC, and makes building a miniature hand-held RF transmitter very easy

RF receiver:

RWS-434: The receiver also operates at 433.92MHz, and has a sensitivity of 3uV. The WS-434 receiver operates from 4.5 to 5.5 volts-DC, and has both linear and digital outputs.

V. RESULT

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VI. CONCLUSION

Here by we conclude that this project is very easy to implement on current system, low cost and durable, ensures maximum safety to passengers and public, the driver gets all information about the road without distracting him from driving, driver gets all information even in bad weather conditions, low power consumption. This project is further enhanced by automatic speed control when the vehicles get any hazard signal from outside environment.

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