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Intelligent Speed Observing in Transportation system Using ARM 9

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Abstract: ***Radio Frequency Identification (RFID) has attracted considerable attentions in recent years for its broad applications and complements to the current GPS navigation system when GPS signals are not available But in practice, GPS does not provide sufficient formation for navigation due to its low positioning accuracy (5 to 7 meters).Moreover, even combined with map-matching technologies, GPS still cannot achieve lane level positioning and cannot provide information regarding the traffic direction in the current lane.***

In this paper we conclude ARM based LPC2148, S3C2440A, PIC18F452, RF434, ZIGBEE, RFID READER. The proposed system contains mainly four nodes vehicle unit, two reader units, central unit. Vehicle unit is implemented on ARM7, Central unit onARM9. The reader Units is placed in a distance of 50-100 metes to each. When a vehicle crosses first reader unit the tag attached to vehicle read by the reader unit and it starts timer send intimation to central station , when the vehicle reaches the second Reader unit there also the Tag is read by reader unit and it also send the intimation and time details to central station. By taking these details the central station calculates the speed of the vehicle and also detects the location of vehicle based on reader's position and sends this information to Vehicle. If the vehicle is going with high speed than predefined then the speed control unit slowly reduce the vehicle speed. The central unit also provides the next location information to vehicle so that he can decide the route that he wants to go. The communication between Vehicle unit and Central unit is using Zig- Bee whereas the communication between reader units and Central unit is using RF434 wireless module.

Keywords— RF434, RFID READER, LPC2148, ZIGBEE.

I. INTRODUCTION

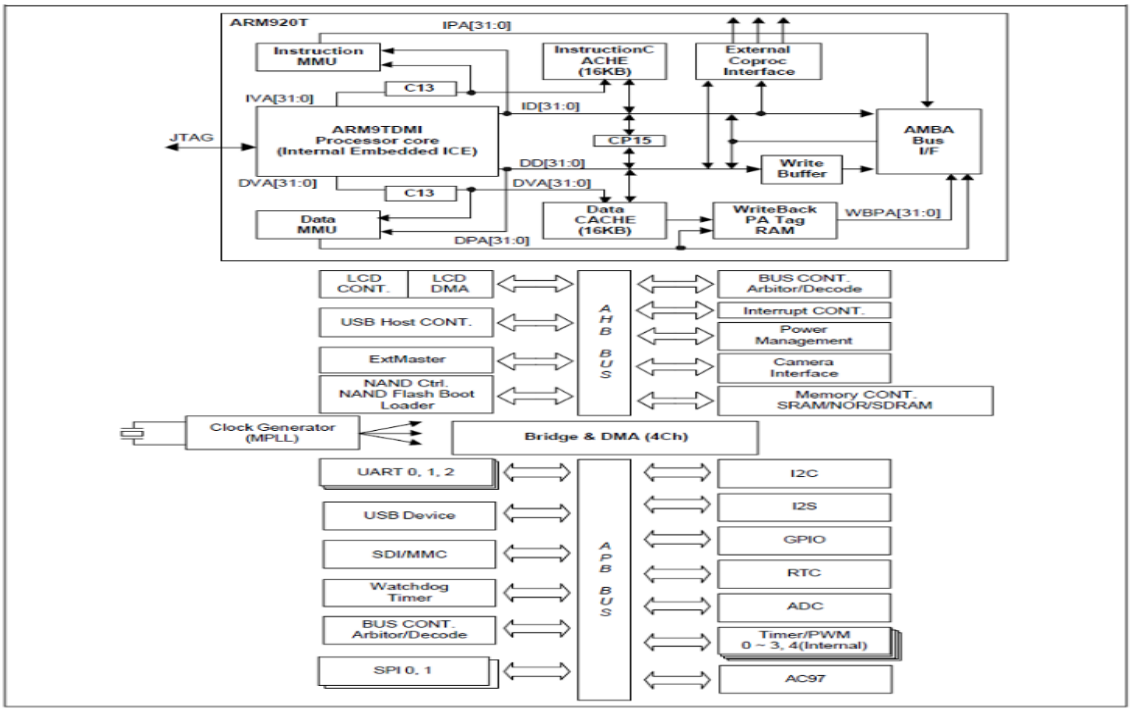
An automated Vehicle monitoring system is developed by using an Active Tag RFID system. The requirement for an active tag arose from the fact that vehicle applications requires a long range as well as sufficient power for the tag to ensure reliable data transfer between the modules. Radio Frequency Identification (RFID) has attracted considerable attentions in recent years for its broad applications in ubiquitous computing. The main aim of the project is to detect the vehicle, find out the present and next locations of the vehicle and easily we can control the speed of the vehicle.

II. EXISTING SYSTEM

The GPS project was developed in 1973 to overcome the limitations of previous navigation systems, integrating ideas from several predecessors, including a number of classified engineering design studies from the 1960s. GPS was created and realized by the U.S. Department of Defenses and was originally run with 24 satellites. It became fully operational in 1994. Bradford Parkinson, Roger L. Easton, and Ivan A. Getting are credited for inventing it. Advances in technology and new demands on the existing system have now led to efforts to modernize the GPS system and implement the next generation of GPS III satellites and Next Generation Operational Control System (OCX). There are also the planned European Union Galileo positioning system, Chinese Compass navigation system, and Indian Regional Navigational Satellite System. But in practice, GPS does not provide sufficient information for navigation due to its low positioning accuracy (5 to 7 meters).Moreover, even combined with map-matching technologies, GPS still cannot achieve lane level positioning and cannot provide information regarding the traffic direction in the current lane. In the remote areas GPS does not provide information why because signals are not sufficient in such kind of areas. If any vehicle will be entered in that region we cannot detect the vehicle.

An RF module (radio frequency module) is a (usually) small electronic device used to transmit and/or receive radio signals between two devices. In an embedded system it is often desirable to communicate with another device wirelessly. This wireless communication may be accomplished through optical communication or through Radio Frequency (RF) communication. For many applications the medium of choice is RF since it does not require line of sight. RF communications incorporate a transmitter and/or receiver.

III. BLOCK DIAGRAM OF MICROCONTROLLER



The LPC2148 microcontrollers are based on a 32 bitARM7TDMI-S CPU with real time emulation and embedded trace support, that combines the microcontroller with embedded high speed flash memory of 512 kB. A 128-bit wide memory interface and unique accelerator architecture enable32-bit code execution at the maximum clock rate. For critical code size applications, the alternative 16-bit Thumb mode It was electricity in the beginning....The people were happy because they did not know that it was all around them and could be utilized. That was good. Then Faraday came and a stone has started to roll slowly. The first machines using a new sort of energy appeared soon. A long time has passed since then and just when the people finally got used to them and stopped paying attention to what a new generation of specialists were doing, someone came to an idea that electrons could be a very convenient toy being closed in a glass pipe. It was just a good idea at first, but there was no return. Electronics was born and the stone kept on rolling down the hill faster and faster.

A new science - new specialists. Blue coats were replaced with white ones and people who knew something about electronics appeared on the stage. While the rest of humanity were passively watching in disbelief what was going on, the plotters split in two groups .“software-oriented” and “hardware-oriented”. Somewhat younger than their teachers, very enthusiastic and full of ideas, both of them kept on working but separate ways. While the first group was developing constantly and gradually, the hardware-oriented people, driven by success, threw caution to the wind and invented transistors. Up till that moment, the things could be more or less kept under control, but a broad publicity was not aware of what was going on which soon led to a fatal mistake! Being naive in belief that cheap tricks could slow down technology development and development of the world and retrieve the good all days, mass market opened its doors for the products of Electronics Industry, thus closing a magic circle. A rapid drop in prices made these components available for a great variety of people. The stone was falling freely. The first integrated circuits and processors appeared soon, which caused computers and other products of electronics to drop down in price even more. They could be bought everywhere. Another circle was closed! Ordinary people got hold of computers and computer era has begun.

While this drama was going on, hobbyists and professionals, also split in two groups and protected by anonymity, were working hard on their projects. Then, someone suddenly put a question: Why should not we make a universal component. A cheap, universal integrated circuit that could be programmed and used in any field of electronics, device or wherever needed? Technology has been developed enough as well as the market. Like all good things, this powerful component is basically very simple. It is made by mixing tested and high- quality "ingredients" (components) as per following receipt.

On the basis of these rules, numerous types of microcontrollers were designed and they quickly became man's invisible companion. Their incredible simplicity and flexibility conquered us a long time ago and if you try to invent something about

them, you should know that you are probably late, someone before you has either done it or at least has tried to do it.

IV. PIC18F452

It is a 'C' compiler optimized instruction set architecture. It can operate up to 10 MIPS. Power consumed is 40 MHz o sc/clock input and 4 MHz - 10 MHz o s c /clock input with PLL active. It is of 16-bit instructions, 8-bit wide data path. Three external interrupt pins.

V. ZIGBEE

Zig Bee is an open technology developed by the Zig Bee Alliance to overcome the limitations of BLUETOOTH and Wi-Fi. Zig Bee is an IEEE 802.15.4 standard for data communications with business and consumer devices. It is designed around low power consumption allowing batteries to essentially last forever. BLUETOOTH as we know was developed to replace wires and Wi-Fi to achieve higher data transfer rate, as such till now nothing has been developed for sensor networking and control machines which require longer battery life and continuous working without human intervention.

VI. RF434

The purpose of an RF434 system is to enable data to be transmitted by a portable device, called a tag, which is read by an RF434 reader and processed according to the needs of a particular application. The data transmitted by the tag may provide identification or location information, or specifics about the product tagged, such as price, colour, date of purchase.

VII. IMPLEMENTATION

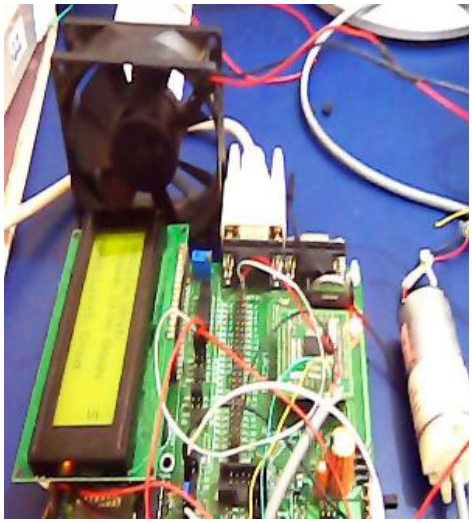
Reader unit 1 and 2 contains PIC18F452, RFID reader andRF434 Wireless module. Tx pin of RFID reader is interfaced to Rx pin of PIC18F. Rx pin of RF434 is interfaced to Tx pin ofPIC18F. Vcc is given as 5v.When a vehicle crosses first reader unit the tag attached to vehicle read by the reader unit and it starts timer send intimation to central station. By taking these details the central stations calculates the Speed of the vehicle and also detects the location of vehicle based on reader's position and send this information to Vehicle. So the vehicle in this system is going to know the location and the speed that it is going, if the vehicle is going with high speed than predefined then the speed control unit slowly reduce the vehicle speed. The central unit also provides the next location information to vehicle so that he can decide the route that he wants to go. The communication between Vehicle unit and Central unit is using Zig Bee whereas the communication between reader units and Central unit is usingRF434 wireless module.

Vehicle unit contains ARM7 LPC2148 Controller, speed control unit & buzzer, Zig Bee wireless module, RFID tag and LCD. Zig Bee is present on board itself for ARM7.External interrupts: Switch 1 to P0.15; for increment Switch 2 to P0.3;for decrement Central unit consists of ARM9S3C2440A, RF Wireless module, Zig Bee wireless module and PC. ARM9 board is interfaced to PC via serial port. The Tx pin of S3C2440A is interfaced with Rx pin of RF434. Rx pin of S3C2440A is interfaced with Tx pin of RF434. Another Tx pin of S3C2440Ais interfaced with Rx pin of Zig Bee and Rx pin of S3C2440A is interfaced with Tx pin of Zig Bee. Through Zig Bee the data is transmitted and received from central unit to vehicle unit.

If the vehicle is going with very high speed through the command user will reduce the speed. This reducing information reaches the central unit through the wireless module and that will be displayed in pc of central unit. Active RF434 uses an internal power source (battery) within the tag to continuously power the tag and its RF communication circuitry, whereas passive RF434 relies on RF energy transferred from the reader to the tag to power the tag.

A. Result of vehicle unit

Vehicle unit is connected to the vehicle. This is developed by ARM7 LPC2148 controller. 9V supply will be given to this vehicle unit. Speed of the vehicle will be controlled in this module. If the speed is high, automatically speed will be reduced. If it is reduced by the user then that information will be displayed in the central unit. LCD is also connected to theARM7 board, this displays the next location of the vehicle from the junction point .



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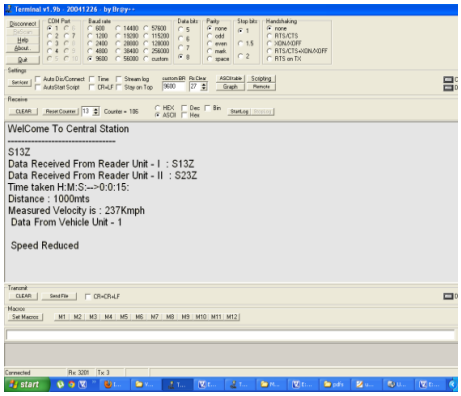

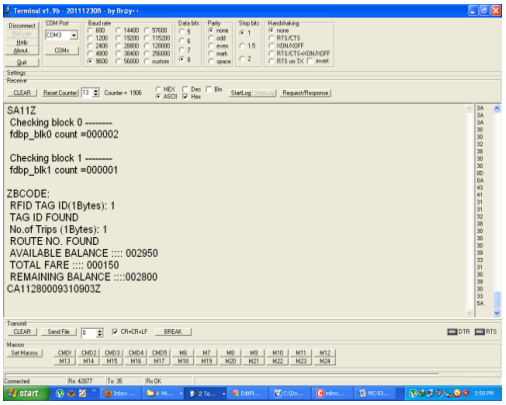

VIII. CONCLUSION

Hence this project can conclude that this plays a very important role in the remote areas. If any vehicle will been in GPS signals insufficient areas easily owner of can detect the vehicle, easily owner of the vehicle knows the present location of the vehicle and next location of the vehicle. Speed of the vehicle is also controlled by the user
from the central station only.

IX. FUTURE SCOPE

1. If GSM technology will be used in this project then the location of the vehicle for each reader unit will be sentto the vehicles owner's mobile.
2. Wi-Fi technology is also used in this project. With this application the location of the vehicle for every reader unit will be sent to the vehicle owner's mail

REFERENCES

[1] M. Kodialam and T . Nanda gopal , "Fast and Reliable Estimation Schemes in RFID Systems," Proc.MobiCom'06,

2006, pages: 322-333.
[2] L. Xie, B. Sheng, C.C. Tan, Q. Li and D. Chen, "Efficient T a g Identification in Mobile RFID Systems ,"Proc .IEEE INFOC OM'10, Mar.2010.
[3] S.R. Lee, S.D .Joo and C.W. Lee, "An Enhanced Dynamic Framed Slotted Aloha algorithm for RF IDT a g I d e n t i f i c a t i o n , "Proc. The Second Ann. Int'l Conf. Mobile and Ubiquitous Systems: Networking and Services(MOBIQUITOUS '05), 2005, pages: 166-174.

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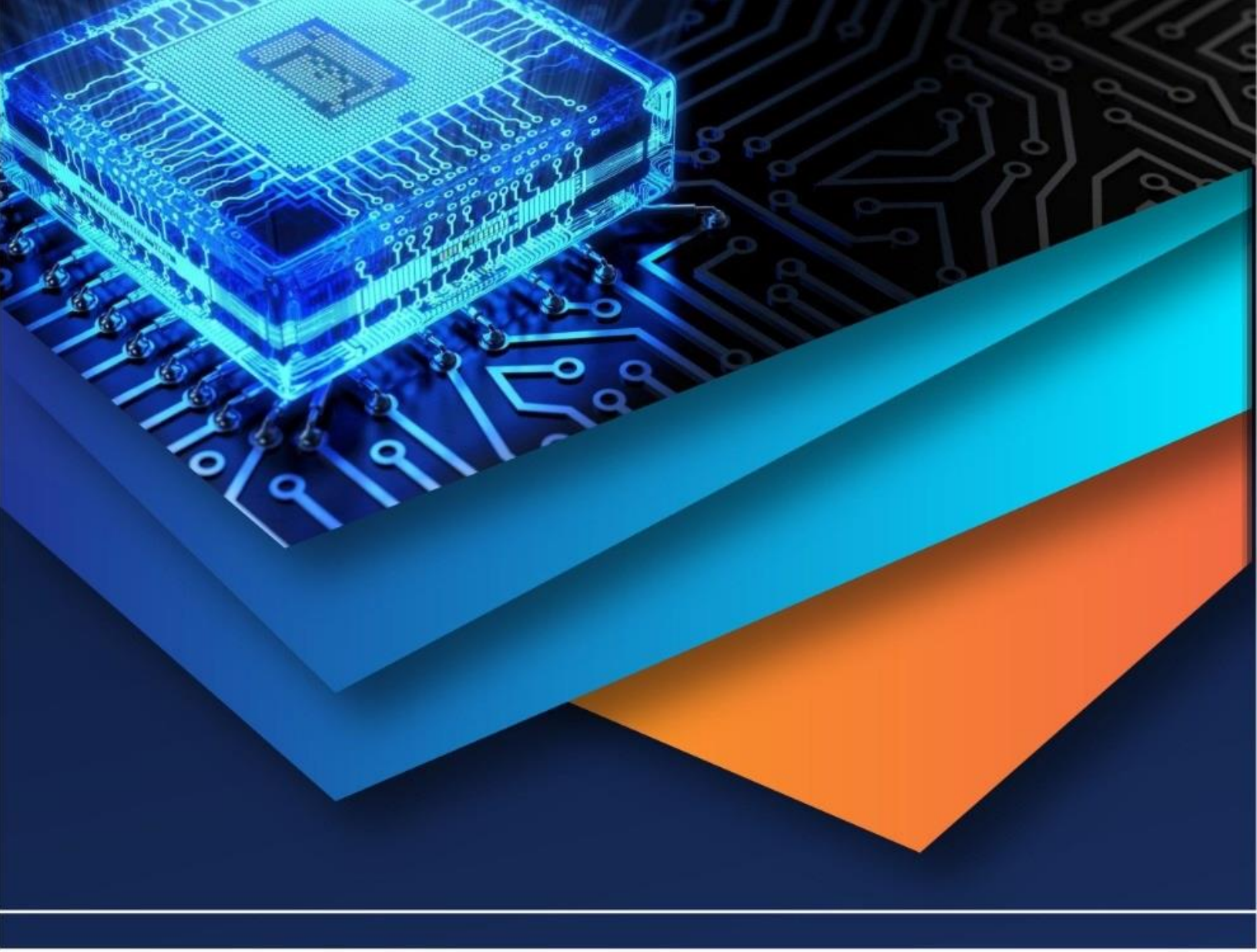

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