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Real Time Vehicle Speed Monitoring And Controlling System

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Abstract: *In order to have safe vehicle traffic across the expressway, a real time monitoring has become a vital need for the today's intelligent traffic monitoring systems (ITS). This project is helpful for controlling the traffic and avoid the accident that can be seen in daily life. This system provides easy platform to analyze the traffic problems due to high speed and visibility on the road. Here an arduino can be used as a core controller and resultant data can be viewed on the server. The aim of this project is to assist road safety authorities to monitor. Traffic control department and Road traffic organization may use this for studying and analyzing the traffic problems. This model present a design and development of low cost and reliable which consists of an array of RFID sensors for the real time tracking of the vehicle on its transit. The uniquely detecting capability of vehicle using RFID sensor network makes it a better choice. In this project speed of the vehicle is approximated in the real time environment. Here, Arduino with Ethernet connection can be used as a core controller and the resultant data can be viewed on the internet and the system is also implementing with humidity detection feature where system can humidity in air and with respect to that inform about vehicles the speed limit with the help of loud speaker.*

Keywords: *Arduino, ESP wifi module, Humidity sensor, Loud Speaker, RFID Reader, SD Card.*

I. INTRODUCTION

The system, namely REAL TIME VEHICLE SPEED MONITORING AND CONTROLLING SYSTEM USING ARDUINO is composed of three components: (i) the independent module that is the core of the device based on a rfid reader connected to an arduino that forwards the acquired data to the server through ESP 8266; (ii) independent module for recording voice is a voice module. iii)moisture sensor use to measure moisture .

System collects data from analog sensors and sends data to server through esp8266 wifi module. Radio Frequency Identification (RFID) has firmly been established as one of the leading technologies for object recognition. In this real time vehicle speed monitoring and controlling system using arduino and RFID sensors used for control the traffic and humidity sensor are used to avoid the accident .

The ESP module is a Wi-Fi microchip with full TCP/IP stack and microcontroller capability. ESP modules used for interfacing in between server and the system.It gives command to the system.. Server is engineered to manage, store, send and process data 24-hours a day it has to be more reliable than a desktop computer and it offers a variety of features and hardware.

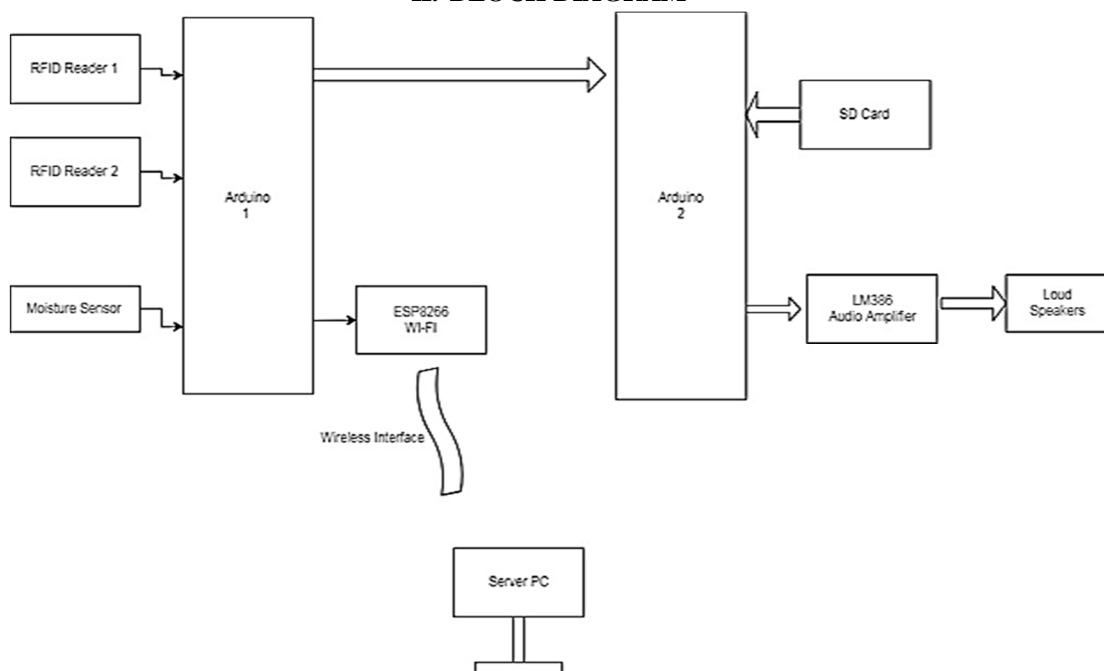
This is used for command to vehicle rider by using ESP module. Humidity and Temperature sensor, which generates calibrated output. DHT11 can interface with any microcontroller like Arduino, Raspberry.

It use a humidity sensor to measure the moisture in surrounding air, and splits out digital signal on the data pin. This also works like controlling part for the system and avoid accident. This system measures the humidity and moisture in the environment and announce the speed limit for the vehicle.

SD card is used to store the commands of speed limit ,when the vehicle rider crosses the speed limit in announce the speed limit by using speaker.

Speaker is the main output device used in this system. A speaker is an electronic transducer, which converts electrical audio signal into sound. In this system speaker is used to announce the speed limit of vehicle and it also announce the Number plate of the vehicle. The speaker used for the controlling purpose in this system.

II. BLOCK DIAGRAM



A. Block Diagram Description

Microcontroller: High Performance, Low Power AVR® 8-Bit Microcontroller. 23 Programmable I/O Lines. The Arduino is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started..

- 1) **RFID:** RFID is an Automatic Identification and Data Capture technology that uses radio frequency waves to transfer data between a reader and a tag attached to an object, for the purpose of identification and tracking. This is a low frequency (125Khz) RFID reader with serial output with at range of 8-12cm.
- 2) **ESP Module:** ESP module is used to communicate with the server so the necessary action taken by the server.
- 3) **Server PC:** Server gets the output from controller and it takes necessary action according to the input. If vehicle crossed speed limit it gives command to loud speaker.
- 4) **Humidity Sensor:** DHT11 digital temperature and humidity sensor is a composite Sensor contains a calibrated digital signal output of the temperature and humidity. It basically senses the humidity in the air and according to the humidity level in the air speed of the road is decided. It is a Low cost, long-term stability, relative humidity and temperature measurement, excellent quality, fast response, strong anti-interference ability, long distance signal transmission, digital signal output, and precise calibration.
- 5) **Loud Speaker:** It plays an important role in the system. It announces the plate number of the vehicle which crossed decided limit of the road. The LM386 is a mono low voltage amplifier that can be used in a variety of applications. It can drive loads from 4Ω to 32 Ω. This device comes in three different 8-pin packages.
- 6) **Sd Card:** SD card use to store the voice which is going to announce on the loud speaker. Micro SD Card is a Flash – Based memory card. It is designed to meet the security, performance and environment requirements to use in emerging audio and video electronic device

III.METHODOLOGY

- 1) **RFID Reader:** RFID is an abbreviation of Radio Frequency Identification. RFID is an automatic Identification and Data Capture technology that uses radio-frequency waves to transfer data between a reader and an electronic (RFID) tag attached to an object, for the purpose of identification and tracking. Unlike a barcode, the tag need not be within the line of sight of the reader, so it may be embedded in the tracked object.

- 2) *RFID Tag*: A memory device, usually eeprom, programmed with a series of bits/bytes. Reader/Writer (Interrogator) the unit powers the coil of wire known as the antenna filters and powers them for transmission over distance. Host computer/Software is a unit to interface the reader to an intelligent device.
- 3) *Humidity Sensor*: DHT11 digital temperature and humidity sensor. It contains a calibrated digital signal output of the temperature and humidity. It basically senses the humidity in the air and the speed of the road is decided. It is a Low cost, relative humidity and temperature measurement, excellent quality, fast response, strong anti-interference ability, long distance signal transmission, digital signal output.

IV.RESULT

- A. This system will measure the vehicle speed.
- B. The vehicle which is over the speed limit will be announced by this system.
- C. Humidity in the air will be measured by this system.
- D. Number Plate of the vehicle will be announced by the Loud Speaker.



Fig. (1) real time vehicle speed monitoring system.



Fig.(2) Result for speed limit 20



Fig.(3) Result for speed limit 40



fig.(4) Result for speed limit 60



Fig.(5) Results in auto command

V. CONCLUSION

In this project, a real time vehicle speed monitoring is design using RFID technology. Low cost solution to assist enforcement authorities in monitoring and regulating the speed of road vehicles. Real time speed monitoring of the vehicle is important to avoid fatal accidents on the expressways. Alerts raise for the drivers at times when driver exceeds the limits.

Sr. No	Humidity range	Speed(m/sec)
1	0 to 25	60
2	26 to 50	40
3	51 to 75	20

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