Triples Avoided and Speed Control in Two Wheelers using Sensors

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Abstract

This paper developed to the reducing for road accidents and controlling the speed of the two wheelers. Many no of two wheelers used in Indian country. The two wheeler only designed for many countries in Indian road and climate based on two wheelers. In this system focuses on the secure two wheeler driving and the rider safety. Multiple type sensors are used in this project and developed to controller based upon their system. If control and preventing more than 2 persons driving in a bike or scooter. Many middle class peoples are used two wheelers in India. India is more than 40 million peoples are using two wheelers. This project is only controlling speed level and avoid the triples riding in vehicles. Peoples choose two wheelers over car as it as cheaper to four wheeler cost. Infrared sensor is sensing the no of person in two wheelers. The sensor are indicated by placing the transmitter and receiver modules at footpath and under seat. Once the information is received from the sensor, the signal sends to vehicle's microcontroller unit automatically speed reduced in vehicle.
Keyword- ALU, Microcontroller, IR Sensor

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I. INTRODUCTION

The project aims to provide over speed control in triples ride for two wheeler. India has the highest number of road accidents in the world. 32% of the accidents victims die at the crash site, 14% in the ambulance and the rest in the hospital. Every year increased two wheelers level in India. Many advanced technologies are developed in two wheelers at certain time duration. Every 15 minutes one bike manufacturing in bike industries. India accounts for more than 180000 deaths are analyzed in road accidents, according to the global road safety report at 2015. Indian government to create many rules and restriction in two wheeler riders. IR and flex sensors are used in this project to control the speed and analyzing the no of person sit on the bike. The controller is controlling speed and triples avoided at 24*7 automatically. The first idea is basic logic gates and switches to control and monitoring the no of persons in vehicle.

II. OBJECTIVE

Our main objective is ensure the safety of the human life. Human life is precious one. In this paper, by using IR and flex sensors module as its main component. If prevent the woman life and reducing accident deaths.
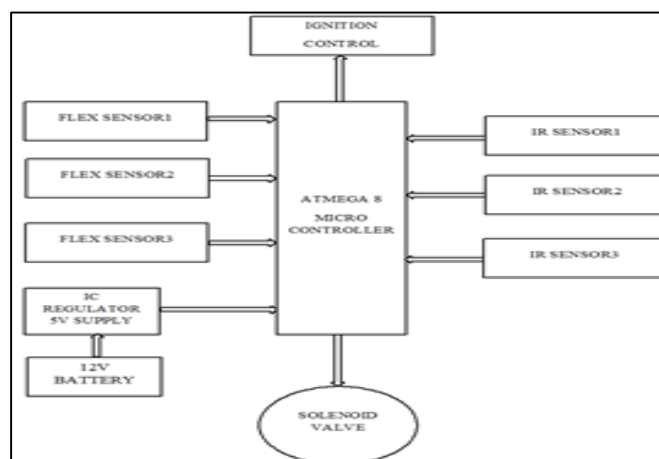
III. BLOCK DIAGRAM

Fig. 1: Block Diagram

IV. LITERATURE SURVEY

Many projects are developed through only speed control in two wheelers only, but triples avoider is not implemented in two wheelers. Speed control is developed through many types and advanced technologies are used in the two wheelers and vehicles. In my paper are developing to the basic sensor to control the speed and avoid the triples riding in two wheelers automatically.

A. Microcontroller
A Microcontroller is a computer on a single integrated circuit using single or multiple processors core, programmable input and output and memory devices. This microcontroller is controlled input and output of the many systems. This programmed memory in the form of flash or NOR flash and OTP ROM is also included in the system. Integrated chips are using to the controller and a small amount of RAM.

B. ATMEGA8 Microcontroller
Atmel Corporation developed through ATMEGA8 or AVR microcontroller in 1996. The microcontroller developed to the 8051 to Harvard architecture that works rapidly with the RISC. The RISC features is improved microcontroller speed and response. The features of this controller include different with sleep mode-6, inbuilt analog to digital converter. Internal oscillator and serial data communication, performs to the instructions in a single execution cycle. This microcontroller are very fast and they utilize low power to work in different power saving modes. Many type of AVR microcontrollers available to perform various operations 8-bit, 16- bit, and 32-bit.

V. EXISTING SYSTEM

When you think of work related safety measures, you probably think about safety and control in two wheelers. But one of the safety is not in the workplace, but rather than on the road. Each year two wheeler accidents increased in India. Two wheelers are used in middle class peoples in India. Most of the peoples travelling throw one place to another place in two wheelers. Only speed is controlled by accelerator in two wheeler. But many peoples went to go in over speeding in two members and above the bike. Only two wheelers manufacturers are manufacturing in two persons only in bikes. But nowadays young age peoples and family persons are travelling in bike above three and four peoples.

These problems may be controlling in city and traffic areas only with help of traffic. The current system used to avoid excess persons driving includes a load cell which continuously measures the load on seats. If the load exceeds the threshold value, then the engine would not start. The existing system only control speed only. No of persons is calculated not possible in existing system. Microcontroller is used to control the speed level and monitoring the speed in two wheelers.

A. Proposed System
This paper deals with the idea of restricting excess person seating on a two wheeler. The proposed design aims to minimize the number of accidents that occur on road. It enforces a uniform and well-communicated protocol to help overcome the above-mentioned issues. This system also ensures protection from accidents and the riders' safety.

Here flex sensors are used for detecting the number of persons seated on the back seat. And three infrared sensors are placed near the foot rests which detects the number of legs. Incase if all the three sensors are sensed, then the controller will fix a state where the bike won't start. If women are sitting on the back, then the system is programmed to go in a minimum speed. This is done by the logic of taking the two of the foot rest sensors on the same side is detected. The speed control is done by reducing the flow of fuel through the solenoid valve.

B. Simulation with Circuit Diagram
This circuit diagram developed through proteus8 software. The components are fixed at normal circuit connection. But microcontroller program developed through AVR ATmega programmer in the controller. IR sensors and flex sensors are connected input of the microcontroller. Solenoid valve is output of the system and ignition control is main of this project. The power supply block is the one which energizes all the devices in this system. The flex sensors and ir sensors are connected to the microcontroller Atmega8. The solenoid valve is connected to the 15 th pin of the microcontroller PB1. Based on the signal received from the controller, the fuel flow is controlled.
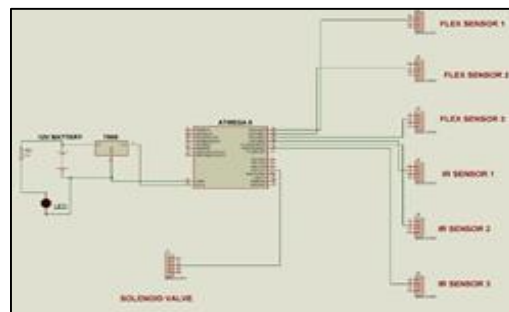
C. Pin Descriptions

1) VCC
Digital supply voltage.

2) GND
Ground.

3) Port B(PC7..PB0)
Is an 8-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The Port B output buffers have symmetrical drive characteristics with both high sink and source capability. Port B pins that are externally controlled low will source current if the pull-up resistors are activated. The Port B pins are tri-stated or three when a reset condition becomes active, even if the clock is not running.

4) Port C (PC5..PC0)
The bi directional input and output ports with internal resistors in the all ports .The buffers have symmetrical drive characteristics with the both high and source compatibility. These pins are connected input and output externally. The pins are tri or three stated in a reset condition become active, even if the clock is not running.

5) Port D (PD7..PD0)
The Port D is an bi directional 8 bit input/output port with internal pull up resistors. The port d is the output buffers have symmetrical drive characteristics with both high sink and source capability. The inputs is externally pulled low will source current if the pull up resistors are In order to maximize performance and parallelism, the AVR uses a Harvard architecture with separate memories and buses for program and data. Instructions in the Program memory are executed with a single level pipelining. While one instruction is being executed, the next instruction is pre-fetched from the Program memory. This concept enables instructions to be executed in every clock cycle. The Program memory is In-System Reprogrammable Flash memory. The fast-access Register File contains 32 x 8- bit general purpose working registers with a single clock cycle access time. This allows single-cycle Arithmetic Logic Unit (ALU) operation. In a typical activated. The port pins are tri or three stated when a reset condition becomes active even clock is running

6) RESET (Reset input)
The pin is low level pin for longer than the minimum pulse length will generate a reset

7) AVCC
AVCC is the supply voltage pin for the A/D Converter, Port C (3..0), and ADC (7..6). It should be externally connected to VCC, even if the ADC is not used. If the ADC is used, it should be connected to VCC through a low-pass filter.

8) AREF
AREF is the analog reference pin for the A/D Converter. These pins are powered from the analog supply and serve as 10-bit ADC channels.

9) Basic Function
The main function of the CPU core is to ensure correct program execution. The CPU must therefore be able to access memories, perform calculations, control peripherals, and handle interrupts.
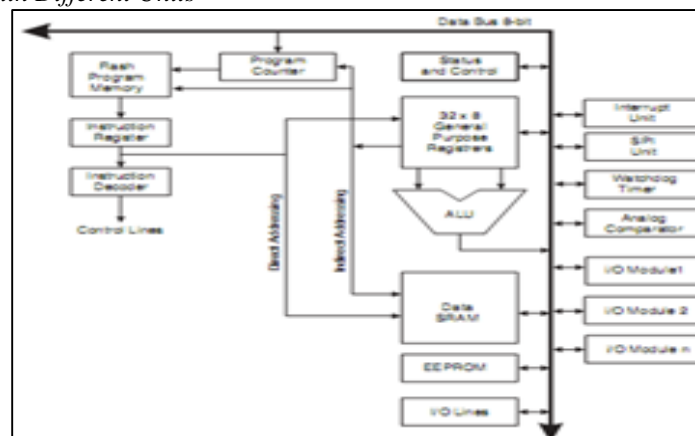
D. Interfacing Of Data Bus with Different Units

Fig. 2.1: Interfacing of Data Bus with Different Units

ALU operation, two operands are output from the Register File, the operation is executed, and the result is stored back in the Register File in one clock cycle.

Six of the 32 registers can be used as three 16-bit indirect address register pointers for Data Space addressing enabling efficient address calculations. One of this address pointers can also be used as an address pointer for look up tables in Flash Program memory. These added function registers are the 16-bit X, Y and Z-register. The ALU supports arithmetic and logic operations between registers or between a constant and a register. Single register operations can also be executed in the ALU. After an arithmetic operation, the Status Register is updated to reflect information about the result of the operation. The Program flow is provided by conditional and unconditional jump and call instructions, able to directly address the whole address space. Most AVR

E. IR Sensor

IR sensors use infra-red light to sense objects in front of them and gauge their distance. The commonly used Sharp IR sensors have two black circles which used for this process, an emitter and a detector (see image right). A pulse of infra-red light is emitted from the emitter and spreads out in a large arc. If no object is

F. Flux Sensor

A flex sensor or bend sensor is a sensor that measures the amount of deflection or bending. Usually, the sensor is stuck to the surface, and resistance of sensor element is varied by bending the surface. Since the resistance is directly proportional to the amount of bend it is used as goniometer, and often called flexible potentiometer.
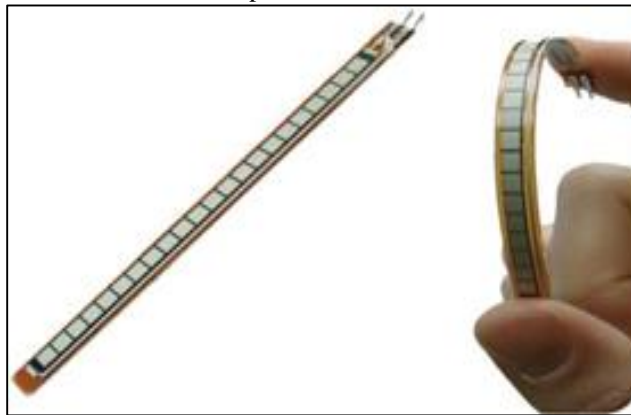

G. Solenoid Valve

A solenoid valve is an electromechanical valve for use with liquid or gas. The valve is controlled by an electric current through a solenoid: in the case of a two-port valve the flow is switched on or off; in the case of a three-port valve, the outflow is switched between the two outlet ports. Multiple solenoid valves can be placed together on a manifold.

H. Voice Board

Easy VR is a multi-purpose speech recognition module designed to add versatile, robust and cost effective speech and voice recognition capabilities to virtually any application. Easy VR is the second generation version of the successful VRbot instructions have a single 16-bit word format. Every Program memory address contains a 16- or 32-bit instruction. Program Flash memory space is divided in two sections, the Boot program section and the Application program section.

Detected then the IR light continues forever and no reading is recorded. However, if an object is nearby then the IR light will be reflected and some of it will hit the detector. This forms a simple triangle between the object, emitter and detector. The detector is able to detect the angle that the IR light arrived back at and thus can determine the distance to the object.

Module and builds on the features and functionality of its predecessor.
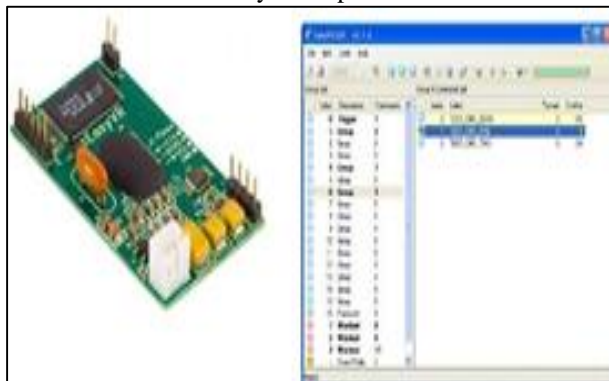
VI. CONCLUSION

The paper based on control the speed and avoid the triples ride in two wheelers. The teenage peoples are using two wheeler. But many ladies are affecting in two wheeler accidents. While conceptualizing the project, our aim was to design a cost and power efficient device which was within the reach of the common man and we have been remarkably successful. We tested it on a prototype and were successful. Our implementation is reliable, economical, power efficient, fully autonomous, considers the privacy of the user and responds quickly. Thus the bike driving safety system was developed and tested. This system ensures safety and traffic rules. The system operates at high efficiency with a limited consumption of power. And the implementation on the bikes is done easily.

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