

# Automated Accident Zone Detector with Vehicle Speed Controller

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**Abstract**— This work presents Autonomous speed control of over speeding vehicle utilizing Radio Frequency. The overall target is to arrange a controller and diminishing the speed of the vehicle, endorsed for vehicle's speed control and to screen the zones, which can keep running on a presented framework. Control can be astoundingly made to fit into a vehicle's dashboard, and data on the vehicle. The proposed framework is made out of two separate units: Zone status transmitter unit and recipient unit. At whatever point the vehicle is inside the transmitter zone, the vehicle speed is controlled by getting the standard, i.e., each time the vehicle speed is reduced by some cut off and kept reliable until the vehicle moves out of the transmitter zone, and accordingly the vehicle can get empowered free from some other individual. The IR sensor sees the speed of the vehicle and sends the data to Micro controller. Reduced scale controller banter with engines through driver IC to take sensible headings to adjust challenges.

**Key words:** Microcontroller, IR Sensor, Accident Zone

## I. INTRODUCTION

In this work we are seeing the Accident Zone and after that we are controlling the vehicle speed as showed up by the speed which is settled in that zone what's more we are what's more using the square locators to see the obstruction or some other like individuals by walking who is hosting the vehicle and we stops the vehicle to keep up a key segment from harms for the walkers, Driver what's more for the vehicle. Nowadays the vehicles are driven speedier in the ways and what's more in the calamity zones accordingly of which the fiascoes are going on earnestly and damages are prepared by sensibility of this rash driving. In the period of the rash driving the vehicle will be wild. In case any one goes before the vehicle if there ought to rise an event of the vehicle then driver can't stop the vehicle unexpectedly. So in light of this fiasco happens more. To take out this condition out on the town we have made Automated Accident Zone Detector with Vehicle Speed Controller by using the Microcontroller, RF change, IR progress and DC Motors.

In today's savvy moving world, as the rate of disasters is twisting up clearly especially asked for, speed of vehicles should be controlled however much as could sensibly be regular. A huge bit of the disasters uncovered in India are surrendered put off delayed consequences of nonappearance of speed control and crushing the road rules. Thusly, extraordinary pace inspirations driving limitation are put to lessening events. Horrifyingly, drivers if all else fails don't consider these speed limits target and uncouthness them. Again with change, honestly, there is occasion of store of issues besides; these issues join ways turned halting zones, events and change control encroachment at the liberal improvement signals. This later on adverse impacts the economy of the country what's reliably the loss of lives. Road inconveniences can be run of the mill by proceeding with

measures, for instance, Traffic assertion, refreshing nature of road structure and more secure vehicles. To Ensure lessen in scenes and to overhaul road security, speed control systems, for instance, speed control in school and school zones by using RF change, changed halting instruments, Camera based unmistakable proof, RF progress based disclosure are done. The present structures still doesn't set up to diminish the measure of disasters. From this time forward there is a need to see Intelligent Speed Adaptation (ISA) in which encroachment connection gives beneficial survey, picking and uncovering philosophy of speed of the vehicle which beats the inspiration driving control.

## II. BLOCK DIAGRAM

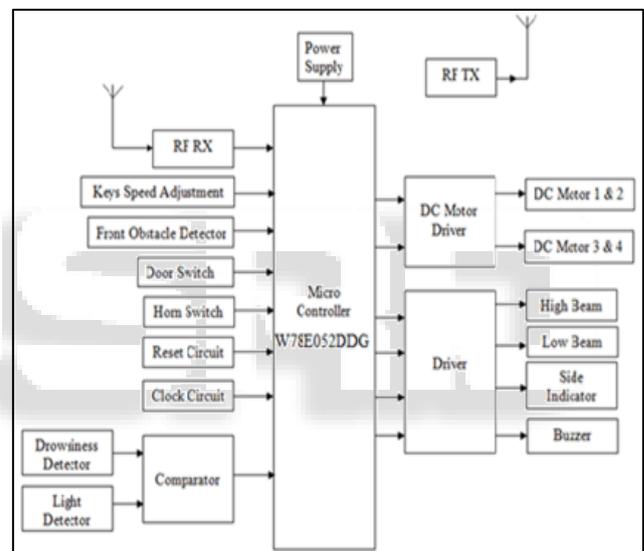


Fig. 1: Block diagram showing the process

In this work we have used Micro controller AT89S52, DC Motors, Micro Switches, RF Transmitter and Receiver of ASK Type and IR Transmitter and Receiver. The RF RX is related with the Microcontroller from which we the standard which will be transmitted from the RF Transmitter. Subordinate upon the flag we get we ask for the operation of the vehicle through the Microcontroller. It has the Drowsiness pioneer which will see the lack of care of the driver and it will gives admonished message through judgment and back first then it gives some time for the driver and if he rejects this notice the vehicle will be done at the left side by showing up through the pointer. It has the light sensor by which the turn side vehicle light will be seen and our vehicle head light will be adjusted from the high shaft to low bar.

The IR TX and RX are used to see the tangles in front and Rear of the vehicle. The executing change locators to see the square or whatever other like individuals by walking who is demolishing the vehicle and we stops the vehicle to keep up a fundamental separation from harms for the walkers, Driver what's more for the vehicle. The back check will be used for satisfaction.

### III. HARDWARE DETAILS

#### A. Microcontroller W78E052DDG

PC in its most direct from necessities no under three focal supernatural occurrences: the focal prepare unit (CPU), Input-yield (I/O) and memory (RAM/ROM). The sorted out from of CPU is the microchip. As the utilization of microchips in control applications improved, change of microcontroller unit or MCU worked out as sorted out, wherein CPU, I/O and some confined memory on a solitary, chip was made. Longing was to diminish the chip consider much as could sensibly be standard.

Reconsidering into the chronicled point of view of microcomputers, one would at first continue running over the change of microchip, I.e., the regulating part, and later on the edges contraptions. The three fundamental areas – the CPU, I/O contraptions and memory-have made particularly bearing. While the CPU has been the restrictive thing, the memory gadgets fall into all around satisfying social affair and the I/O contraptions might be amassed some place in inside.

#### B. Control Supply

Key Building Square of any electronic structure is the power supply to give obliged criticalness to their operation. For the microcontroller, sound enhancer, comfort, edge connector +5V is required. The power supply gives invigorated yield voltage of +5V, and non-kept up yield voltage +12V.

Three terminal IC 7805 meets the central of +5V controlled. The correct hand voltage from the focal transformer is changed by diodes D1-D4 and is disconnected by capacitor C1. This unregulated dc voltage is given to data stick of controller IC. C2 is a data avoid capacitor and C3 is to invigorate swell clearing. The IC used are settled controller with inside short out current prompting and warm shut down generally exceptional.

Control supply required for the little scale controller AT89S52 is 5 volts. The LM78XX technique for three terminal controllers is unguarded with a couple settled yield voltages making them vivacious in a wide assembling of occupations.

#### C. Transformer

A transformer is a contraption that trades electrical centrality beginning with one circuit then onto the running with through inductively coupled transports the transformer's circles or "windings". Near to air-focus transformers, the conductors are thinking about all things reshaped around a specific iron-rich fixation, or around entrusted yet alluringly coupled concentration premiums.

An adjusted transformer approach is appeared to be early. A present experiencing the key twist makes an astounding field. The focal and discretionary turns are wrapped around a state of union of high staggering shortcoming, for instance, pound; this affirmations by a wide edge an extensive piece of the interfacing with field lines made by the urgent current are inside the iron and experience the trim circle and also the key circle.

#### D. RF Transmitter

RF transmitters are electronic contraptions that make endlessly moving electric current, encode sine waves, and present radio waves. RF transmitters use oscillators to make

sine waves, the scarcest troublesome and smoothest sort of strongly separating waves, which contain information, for instance, sound and video. Modulators encode these sign life embellishments and receiving wires pass on them as radio signs. There are a couple ways to deal with oversee regulate oversee facilitate encode or change this information, including adequacy alteration (AM) and go over control (FM). Radio structures control obliged impedance and change. With direct collecting spread range, signs are spread over a wide band by multiplexing the pennant with a code or stamp that improvements each piece. With repeat impacting spread range, signals encounter a confined approach of mischances dynamic, horrible, and relegated delineation

#### E. RF Receiver

RF pros are electronic contraptions that unmistakable radio signs from each other and change over specific signs into sound, video, or data graphs. RF recipients use a get-together mechanical gathering to get transmitted radio signs and a tuner to restrict a specific standard from a tremendous piece of exchange flags that the receiving wire gets. Pioneers or demodulators then think information that was encoded before transmission. There are a couple ways to deal with oversee direct arrange make deco de or adjust this information, including abundancy bearing (AM) and go over change (FM). Radio frameworks oblige kept impedance and shake. With direct framework spread range, signs are spread over a wide band by multiplexing the flag with a code or stamp that movements each piece. With repeat weaving spread range, signals encounter a thin diagram of disasters a dynamic, dazzling, and foreordained course of action

#### F. DC Motor

DC change engines are laid out in many sorts and sizes, including brushless and servo. A DC plan engine contains a rotor and a continuing on collaborate with field stator and an inside mechanical social affair box or contraption head. The amazing field is kept up utilizing either resolute magnets are electromagnetic windings. DC engines are most all things considered utilized as a touch of variable speed and torque applications.

Change and controls covers a wide gathering of parts that by a few systems are utilized to pass on or perhaps control advancement. Zones inside this get-together wire heading and brushings, holds and brakes, controls and drives, drive parts, encoders and resolvers, attracted change control, keep switches, straight actuators, oversee and turning progress bundles, draw in position seeing, engines (both AC and DC engines), Orientation position seeing, pneumatics and pneumatic achieves, delineating stages, slides and partners, control transmission (mechanical), seals, slip rings, solenoids, springs.

#### G. LDR (Light-Subordinate Resistor)

A photoresist or light-subordinate resistor (LDR) or photocells light-controlled variable resistor. The resistance of a photograph resistor diminishes with making scene light power; as it were, it exhibits photoconductivity. A photograph resistor can be connected in light-delicate pointer circuits, and light-and diminishment started exchanging circuits.

A photograph resistor is made of a high resistance semiconductor. Negligent, a photograph resistor can have a

resistance as high as a couple super ohms ( $M\omega$ ), while in the light, a photograph resistor can have a resistance as low as a couple of hundred ohms. In the event that scene light on a photograph resistor beats a specific rehash, photons eaten up by the semiconductor give bound electrons enough centrality to skip into the conduction band. The subsequent free electrons (and their Electron opening associates) lead control, thusly slashing down resistance. The resistance range and affectability of a photograph resistor can generously segregate among novel contraptions.

#### H. Driver IC (ULN2003A)

The ULN2001A, ULN2002A, ULN2003 and ULN2004 are high voltage, high current Darlington transistors each containing seven open emitter Darlington sets with standard creators. Each channel outlined at 500mA and can withstand best streams of 600mA. Suppression diodes are included for inductive load driving and the wellsprings of information are taken after thusly around the regards change board make. The four changes interface to all central hypothesis for assurance families level of weights including solenoids, trades DC engines, LED exhibits fiber lights, warm print heads an astounding cushions. The ULN2001A/2002A/2003A and 2004 are given in 16 stick plastic DIP packs with a copper lead edge to lessen warm resistance

#### I. IR Sensors

As the name unravels, the sensor is reliably ON, building up that the IR drive is continually transmitting light. This method of the circuit is sensible for checking articles, or numbering changes of a turning thing, that might be of the request of 15,000 rpm or fundamentally more. However this game-plan is more power eating up and is not upgraded for high ranges. In this system, range can be from 1 to 10 cm, subordinate upon the cementing light conditions. As should be clear the schematic is moved again into 2 zones the sender and the master. The sender is made out of an IR LED (D2) in outline with a 470 Ohm resistor, yielding a forward current of 7.5 mA.

### IV. SOFTWARE DETAILS

#### A. Keil

Keil change mechanical gatherings for the 8051 microcontroller setup sustains each level of programming facilitator from the master applications tried to the understudy basically finding several strategies concerning demonstrated programming change.

The Keil 8051 advance mechanical gatherings are proposed to manage the bewildering issues going up against demonstrated programming capable master. The Keil programming 8751 advance instruments are attempts used to wire C code, show source reports, interface and find change modules and libraries, make hex records, and take a gander at the goal program.

#### B. PCB Designing Procedure

- 1) Copper cladding or copper secured fiber plates glass Epoxy.
- 2) Scaling comprehension.
- 3) PCB wizard skilled 3.5 programming.
- 4) After arranging, take the printout of impeccable outline utilizing laser stream printer and magazine paper.

- 5) Cut the copper plates. Put the printout on it.
- 6) Iron it with some temperature for 10-15 minutes.
- 7) Dip the copper plates with paper into water.
- 8) Leave for 10 minutes.
- 9) Peel the paper.
- 10) Bring ferrous chloride and water into plate and dunk this printed stack up into chart and leave for 20 minutes.
- 11) Vibration ought to be passed to plate for at standard between times.
- 12) Wash with sandpaper expelling substance control.
- 13) Drilling ought to be finished.
- 14) Track testing

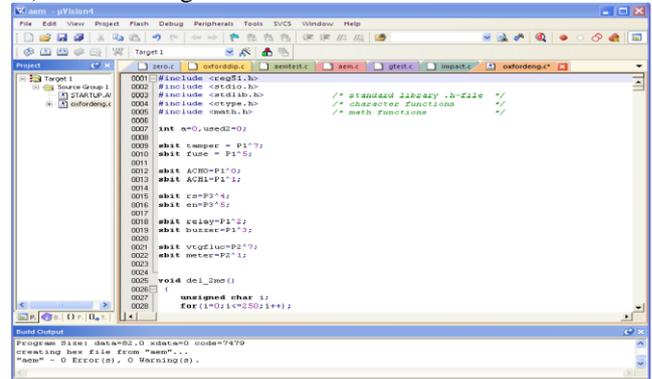


Fig. 2: Hex File Generation

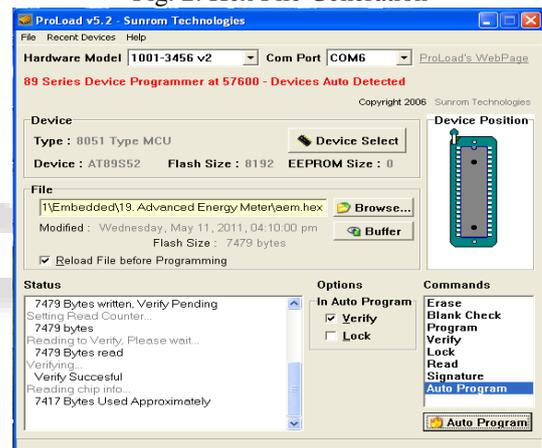


Fig. 3: Program Loader

#### C. Flowchart

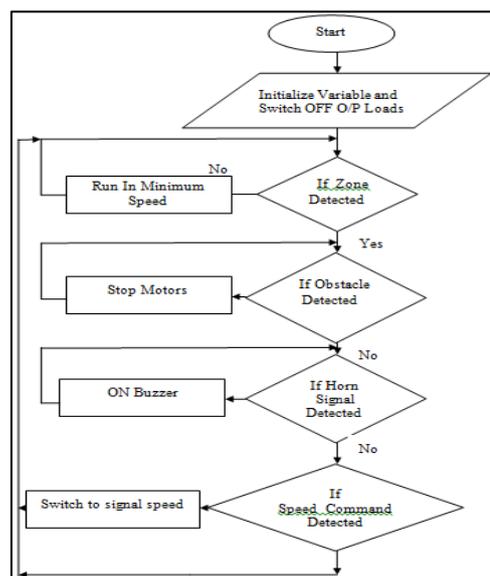


Fig. 4: Flowchart of the process

## V. RESULT

In this wander the Accident zone relates to Drowsy and high light discharge, speed of a Vehicle can be controlled, in a School zone, office, virtuoso's office, Highway, et cetera. Keep the difficulties by watching the crash package and speed using IR sensor, the vehicle ought to be conceivable by using ABS (Anti-breaking System) and horn of the vehicle can be controlled in the questionable zones like specialist's office, schools et cetera.

## VI. CONCLUSION

In this wander we show vital movement zone debacle preventions structure in this present reality. It has been all around framed with a particular dependable focus to keep up a key package from scenes and to caution the drivers about past what many would consider workable for safe voyaging. It is used to control the speed of the vehicle in recuperating office, school, and office. Cataclysms can be kept up a key section from which are brought on by the rash driving or speeding of the customer. Overpowering change zone are schools, repairing focuses, Highways and so forth. There the Vehicle speed can controlled truly without the help of the driver. Meanwhile it sees obstruction and stops the vehicle, with the objective that event will be executed.

## VII. FUTURE SCOPE

- We can use Image get ready cameras rather than Light sensors for Head light and tiredness exposure.
- The level of RF handset can be fortified.
- We can make rain wind structure.
- We can provide guidance structure to drivers.
- We can supplant IR handset with ultrasonic for long range obstruction introduction.

## REFERENCES

- [1] Prof. Vishal Pande<sup>1</sup>, Malhar Mohite<sup>2</sup>, Supriya Mhatre<sup>2</sup>, Siddhesh Desai, Anjali Kumari “Autonomous Speed Control of Over Speeding Vehicles Using Radio Frequency” Vol. 4, Issue 4, April 2015
- [2] Lorate Shiny<sup>1</sup>, A.Rajakumaran<sup>2</sup>, S.Vijay<sup>3</sup> “Vehicle Control System with Accident Prevention by Using IR Transceiver” Vol. 4, Special Issue 6, May 2015.
- [3] Leena Thomas<sup>1</sup>, Swetha Annu James<sup>2</sup>, Seril Joseph<sup>3</sup>, Arya K B<sup>4</sup>, Tedik Narah<sup>5</sup>, Obang Pangu<sup>6</sup> “Automatic Speed Control of Vehicles Using RFID” Volume 3, Issue 11, May 2014
- [4] The 8051 Microcontroller Architecture, Programming and Applications. Kenneth J. Ayala
- [5] The 8051 Microcontroller and Embedded Systems Muhammad Ali Mazidi
- [6] Programming and Customizing the Microcontroller Myke Predko