

# Measuring Of Vehicle Speed Using Radar and SCM Technology

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**Abstract**— By combining radar with a micro processor and with the help of GSM (or) GPS we can measure the speed and we give instructions to the driver immediately if he is driving in more speed. This can be achieved by using Bluetooth and SCM (Single Chip Micro Computer).Buy using Bluetooth and SCM technology we cannot measure the speed to a long distances i.e. we can measure through a small distance of meters .In place of Bluetooth we can use Zigbee technology (or) CAN Protocol. Using zigbee technology we can pass signals through a distance of one kilo meter .So it is better than we can go for CAN Protocol i.e. Controller Area Network.

**Index Terms**—Zigbee, CAN protocol, SCM technology, Micro processor, Radar, GPS Network.

## 1 INTRODUCTION

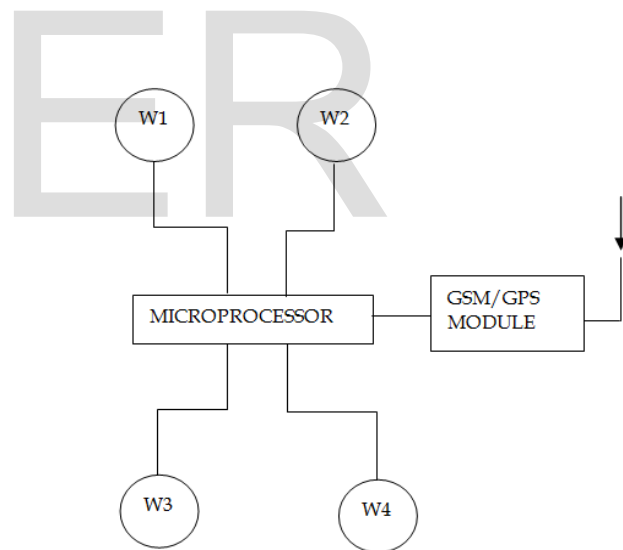
In olden days the traffic was very less and vehicle users are less in number so at that time the traffic was usually less .As the technology is increasing day by day now a days the vehicles are also increasing .In modern days for a small distance we are using car or motor cycle instead of using bicycle .In order to reduce the travel time for going to their offices ,towns and any other cities people are using the vehicles instead of using public vehicles and this may leads to the increase of vehicles and increase the traffic and may leads to the increase of the accidents .In order to reduce the those accidents ,vehicles that using more speed,traffic jams we are going to this technonology I,e MEASURING OF VEHICLE SPEED USING BLUETOOTH AND SCM TECHNOLOGY. Now a day's many accidents are occurring due to over speed of vehicles this can be controlled by using this technology .In order to control the speed and to give the instructions for driver we can go for this.

To avoid rash driving we can easily identify the vehicles that are going in more speed we can pass the signals to the driver and we can warn him to go in medium speed .Not only this during night times many of them were using rash driving we can control them buy using this technology.

The typical block diagram of this technology is shown be-

low. Each and every component of the block diagram is clearly explained below

## 2. VEHICLE BLOCK DIAGRAM



### 2.1 EXPLANATION

Here in this block diagram consists of a vehicle .Here w1, w2, w3, w4 are the wheels of the vehicle .In center of the vehicle a micro processor is placed. Instead of using a micro processor we can use four IC's for every wheel. It is better to use a single micro processor than four chips. Here we are using CAN protocol network (controller area network) .CAN protocol is a message based protocol, designed specifically for automotive applications but now also used other areas such as aerospace, maritime, industrial automation. The modern automobile may have many

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as 70 control units for various systems. The biggest processor is the engine control unit. Others are used for transmission, airbags, anti lock breaking system (ABS). Here in this technology anti lock breaking system plays an important role. Now a day's anti lock breaking system (ABS) is common to all the vehicles. The main advantage of anti lock breaking system is it prevents the vehicle slipping. Suppose if your applying break suddenly to the vehicle the vehicle may slip. Whereas the vehicle fitted with anti lock breaking system the following may occur. If your applying break to the vehicle first the vehicle wheel slows slowly the break is applied by applying and taking the system. This will improves the stability of the system and hence anti lock breaking system is used in this technology. The blocks of the block diagram are: - Micro processor, GSM/GPS Module. The typical explanations for these blocks are given below in detailed.

## 2.2 MICRO PROCESSOR

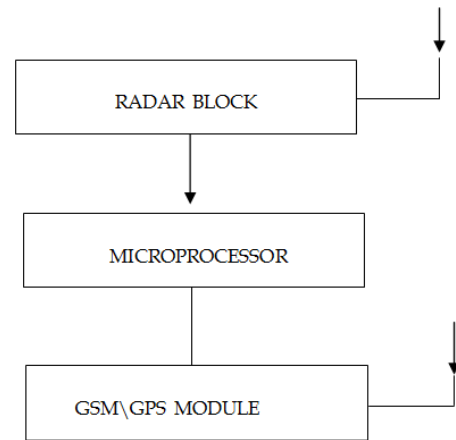
It incorporates the functions of computers central processing unit on a single integrated circuit. All the modern CPUs are microprocessors making the micro prefix redundant. The micro processor is a multipurpose, programmable device that accepts digital data as input process it according to its instructions stored in its memory and provides results as in the form of output. It is an example of a sequential digital logic. It has internal memory. Microprocessors operate on numbers and symbols represented in the binary number system. The integration of a whole CPU onto a single chip or a new few chips greatly reduced the cost of processing power. The integrated circuit processor was produced in large numbers by highly automated process, so unit cost was low. A single processor chip increase reliability as there are many fewer electrical connections to fail. As microprocessor designs get faster, the cost of manufacturing a chip generally stays the same.

## 2.3 GSM/GPS MODULE

Using GSM we are going to find the location of the vehicle and we can easily trace the location of the vehicle. From the CAN protocol (controller area network) the signals are fed to the GSM/GPS module from there to it will fed onto the microprocessor. The network is structured into a number of discrete sections: - Base station sub system, Network and switching subsystem, GPRS core network, operation support system. Here Base station sub system network is used. GSM is a cellular network which means that cell phones connect to it by searching for cells in the immediate vicinity. There are five different cell sizes in a GSM network they are macro, micro, pico, femto and umbrella cells. Here macro cells were used in this technology. Macro cells can be regarded as cells where the base station antenna is installed on mast or a building above average roof top level.

Now the block diagram of observer side is shown below

## 3. STATIC BLOCK DIAGRAM



## 3.1 RADAR BLOCK

Radar is an object range, altitude, direction, or speed of objects. It can be used to detect air craft ships, -detection system that uses waves to determine the spacecraft, guided, motor, weather, and terrain. The radar dish or antenna transmits pulses of radio waves or that bounce off any object in their path. The object returns a tiny part of the wave's energy to a dish or antenna that is usually located at the same site as the transmitter. By using this radar we are going to send the message to the vehicle. This works on Doppler's shift. Speed is the change in distance to an object with respect to time. Thus the existing and then calculating the speed using a slide rule. Modern radar systems perform the equivalent operation faster and more accurately using computers. If the transmitter's output is coherent (phase synchronized), there is another effect that can be used to make almost instant speed measurements (no memory is required), known as the Doppler Effect. Most modern radar systems use this principle into Doppler radar and The Doppler effect is only able to determine the relative speed of the target along the line of sight from the radar to the target. Any component of target velocity perpendicular to the line of sight cannot be determined by using the Doppler Effect alone, but it can be determined by tracking the target's over time. System for measuring distance, combined with a memory capacity to see where the target last was, is enough to measure speed. At one time the memory consisted of a user making grease pencil marks on the radar screen

## 4. FUTURE ASPECT

This technology can be improved by using Micro waves and we can reduce accidents as much as possible. We can control the speed of the vehicle by giving instructions to the vehicle from anywhere in the city or town.

## CONCLUSION

Finally we can control the speed of the vehicle from anywhere in the traffic and we can warn the driver to maintain the minimum speed and we can control the accidents .we can locate the vehicle where it is going with the help of GSM/GPS.

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