# Bluetooth applications

Life

In the current scenario the world is plagued by accidents which are primarily due to human errors in judgment and hence thousands of lives are lost. These accidents can be avoided if only there was a mechanism to alert the driver of approaching danger. This can be done by monitoring the distance between nearby cars and alerting the driver whenever the distance becomes too short. This is precisely the aim of this paper.

In this paper we propose the use of BluetoothTechnologyby which we can check the speed of the car whenever it comes dangerously close to any other vehicle up front, thereby saving very many lives.

Since Bluetooth devices are capable of communicating with eight other devices simultaneously we can monitor and check the speeds of up to eight cars simultaneously, thus preventing accidents.

Thus if we have two Bluetooth enabled devices in two cars the devices automatically communicate with each other when they come in the range of up to 100 meters of each other. The range is dependant on the power class of the product. Power transmission rates vary in many Bluetooth devices depending upon the power saving features available in a particular unit, bandwidth requirements, transmission distance. The statistics ofroad accidentsis tremendous and highlights the need for such a system. The following is a statistic on the number of road accidents occurring each year.

ROAD ACCIDENT STATISTICS OF INDIA 1970-2003

Because of traveling at high speeds there is a possibility of having accident. The figure 2 shows that when two cars or more come within the distance of 10 km at high speeds there is a possibility of having accidents. The Bluetooth

radio is a short distance, low power radio operating in the unlicensed spectrum of 2. GHz and using a nominal antenna power of 20 dBm. [pic] At the 20 dB the range is 100 meters, meaning equipment must be Within 100 meters to each other (about 328 feet) to communicate using the Bluetooth standard. With the help of this technology we can send data to the eight devices. The group of eight devices is known as piconet. Here we have a piconet and a scatternet, in the piconet M is the master and S1 to S7 are the slaves [pic] Radiocommunicationis subjected to noise and interference, as the 2. 4 GHz frequencies are shared between the all device in piconet.

So the Bluetooth specification has solved this problem by employing what is called as spectrum spreading, in which the Bluetooth radio hops among different frequencies very quickly. There are 79 hops starting at 2. 402 GHz and stopping at 2. 480 GHz, each of which is displaced by 1 MHz. The Bluetooth avoids interference by hoping around these 79 frequencies 1600 times per second. So in order to avoid it we use bluetooth equipped car, in which each car have bluetooth transmitter and receiver. And the every car should have mini computer to monitor the relative position of the car with the other car. pic]

When any car comes close together bluetooth device sends warning signal to the car. Based on the type of warning signal received the computer sends signal to the brake control system to slow down the speed of the car. There are two types of control signals. First type of signal control the speed of the car and the second type of signal is to overtake the car which is moving forward.

On receiving the control signal from the traveling car the computer inside the car manipulates the signal and gives control signal to the braking system. There are four main components to an automatic braking system: • speed sensors • pump • valves • controller [pic] Automatic braking pump and valves The computer constantly monitors the distance between each of these cars and when it senses that the car is getting too close it moves the hydraulic valves to increase the pressure on the braking circuit, effectively increasing the braking force on the wheels.

If the distance between two vehicle is within the 100m the Bluetooth devices get enabled and if the distance come closer within 10m the automatic braking system takes the control. After the speed of the car is reduced and distance increased the hydraulic valves decreases the pressure on the braking circuit, thus effectively decrease the braking force on the wheels. The following steps show the various functions of the hydraulic valves: • in position one, the valve is open; pressure from the master cylinder is passed right through to the brake. in position two, the valve blocks the line, isolating that brake from the master cylinder. This prevents the pressure from rising further should the driver push the brake pedal harder. • in position three, the valve releases some of the pressure from the brake.

REPRESENTATION OF OUR IDEA

In the figure 7 when car A and car B come within the range of 100m both the Bluetooth devices get enabled and if any one of the car comes too fast then the bluetooth device sends a warning signal to the other car and it processes the signal and gives it to the automatic braking system. pic]

CONCLUSION: The Bluetooth technology is being widely adopted by the Industry leaders. The possibility for new applications is very exciting with this Versatile technology. It provides a simple, logical answer to all the Problems- which is built a single common radio into every mobile computer, then neither do companies have to worry about WAN, nor do communication companies need to worry about building external cables. The Bluetooth communication device will thus be a small, low powered radio in a chip that will talk to other Bluetooth enabled products.

Bluetooth has been designed to solve a number of connectivity problems experienced by the mobile workers & consumers. Thus, this technology helps make the electronic devices more user friendly and helps address various other problems like accidents. ----------------------- Fig 1 CAR 1 CAR 6 CAR 4 CAR 3 CAR 7 CAR 8 CAR 5 CAR 2 MINI COMPUTER INSIDE THE CAR Fig 2 M S72222222 S1 M2 S2 S1 M1/S S1 S1/S3 M1 S3 Fig 3 Fig 4 Fig 5 Fig 6 Within 10m Sends warning signal Receives signal and control the speed of car Fig 7