ABSTRACT

Telecommunication industry is the world's fastest growing industry with more than 6 billion mobile subscribers (that's 87 percent of the world population) around the globe. This significant rise in use of cellular phone leads to increase in road accidents while driving. Every year nearly 1.4 million people have been killed mainly due to distractions and particularly because of using wireless customers and their over-bearing cell phones. While in India, an estimated 1.34 lakhs persons died due to road accidents in 2010 which is approximately 10% of road accident fatalities worldwide and these are the highest in the world, but still no research has been carried to trace out the number of drivers using cell phone involved in road accidents and very limited effort has been carried out to prevent accidents due to cell phone usage.

To our knowledge, this is the first survey carried out in India to determine the number of drivers involved in an accident due to mobile phone use. According to the study, it is estimated 30% of driver using cell phone met with accidents while the study carried out by the Governors Highway Safety Association (GHSA) and National Safety Council (NSC) of U.S., estimated up to 25% and 28% respectively.

With the aim of preventing such accidents, it is proposed to develop a highly efficient automatic system for early detection of incoming and outgoing call, by placing an antenna along with mobile detection unit above the driver seat. This unit is capable of distinguishing whether the cell phone
used either by the driver or by the passenger, if the driver uses of cell phone is detected, a safety application named Cellphone Accident Preventer (C.A.P.) which is developed using J2ME will be automatically load on the driver’s cell phone which helps in eliminating the risk of accidents from occurring, at the same time ensuring that the user does not miss any emergency call.

When there is an emergency call, a PIC16F917 microcontroller detects whether the vehicle is in motion or not based on RPM values captured using a photo interrupter sensor. If a vehicle in motion is detected, then the microcontroller will activate a voice chip which plays a warning message to the driver. If the driver stops the vehicle within 8 sec., then microcontroller allows the call or else a low range mobile jammer is used which covers only the driver seat will prevent the driver from receiving base stations signals.

From the time of emergency call to the activation of mobile phone jammer including sending a warning message to the driver takes approx. 25 sec. Even this timeframe is sufficient for driver distraction. In order to prevent the user from talking on cell phone during this timeframe, the PIC16F877A microcontroller along with KST-TX01 transmitter is used to transmit the vehicle number plate information to the receiver KST-RX806 module which is placed on a signal post. The obtained data will be displayed on an LCD so that the traffic police can take legislative action against the erring drivers.

The research has been extended to show how far the system will help in preventing accidents and to what extent this system will help in reducing the Indian economic loss incurred unnecessarily due to road accident fatalities.