Design and Development of Seat Belt Alert System with Ignition Interlocking in Four Wheeler

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Abstract- This paper clearly explains about the safety and control systems in the car . Most of the accidents are occurred because of violation of rules . Result of this major accidents happened .In our day-to-day life we are careless in our safety while driving in vehicles for this we have to introduce some techniques to do these precautions compulsory . Such a new technique is explained in this paper.While driving car wearing seat belt is important that can safe our life during accident periods .But most of us are careless to wear seatbelt .

When accidents that careless mistake makes loss of life of driving person and near person . more injuries for driving person and near person only than back sitting persons .

I. STATISTICS FOR THE CAUSE OF ACCIDENTS (TAKEN FROM WHO)

Every year the lives of almost 1.24 million people are cut short as a result of a road traffic crash. Between 20 to 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury.

Road traffic injuries cause considerable economic losses to victims, their families, and to nations as a whole. These losses arise from the cost of treatment (including rehabilitation and incident investigation) as well as reduced/lost productivity (e.g. in wages) for those killed or disabled by their injuries, and for family members who need to take time off work (or school) to care for the injured.

There are few global estimates of the costs of injury, but an estimate carried out in 2000 suggest that the economic cost of road traffic crashes was approximately US$ 518 billion. National estimates have illustrated that road traffic crashes cost countries between 1–3% of their gross national product, while the financial impact on individual families has been shown to result in increased financial borrowing and debt, and even a decline in food consumption.

Road traffic injuries have been neglected from the global health agenda for many years, despite being predictable and largely preventable. Evidence from many countries shows that dramatic successes in preventing road traffic crashes can be achieved through concerted efforts that involve, but are not limited to, the health sector.
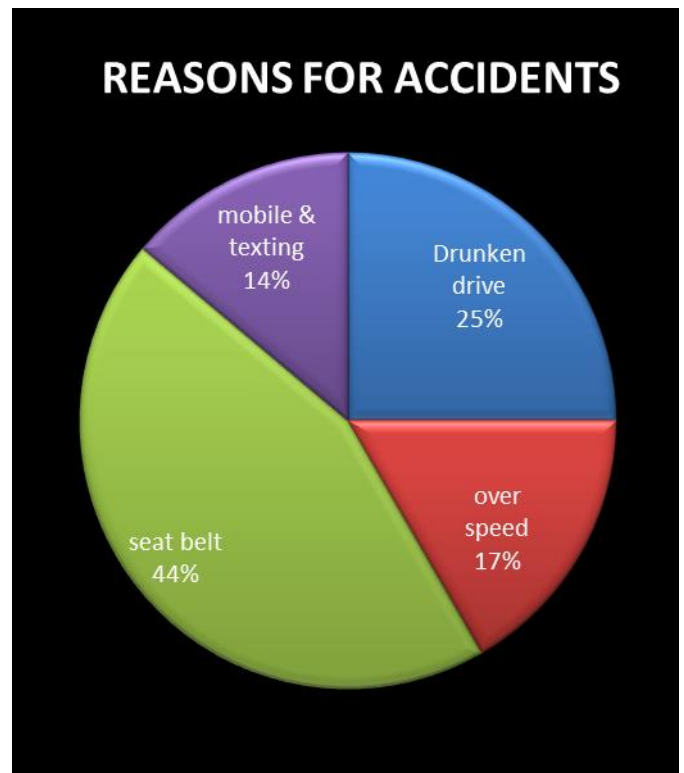
II. HOW TO REDUCE ACCIDENTS ?

We can avoid accidents by wearing a seat-belt reduces the risk of a fatality among front-seat passengers by 40–50% and of rear-seat passengers by between 25–75%.For this we have to make a controlling system by which wearing seat belt is made as compulsory. The operating principle of the controller is explained in the below flow chart.
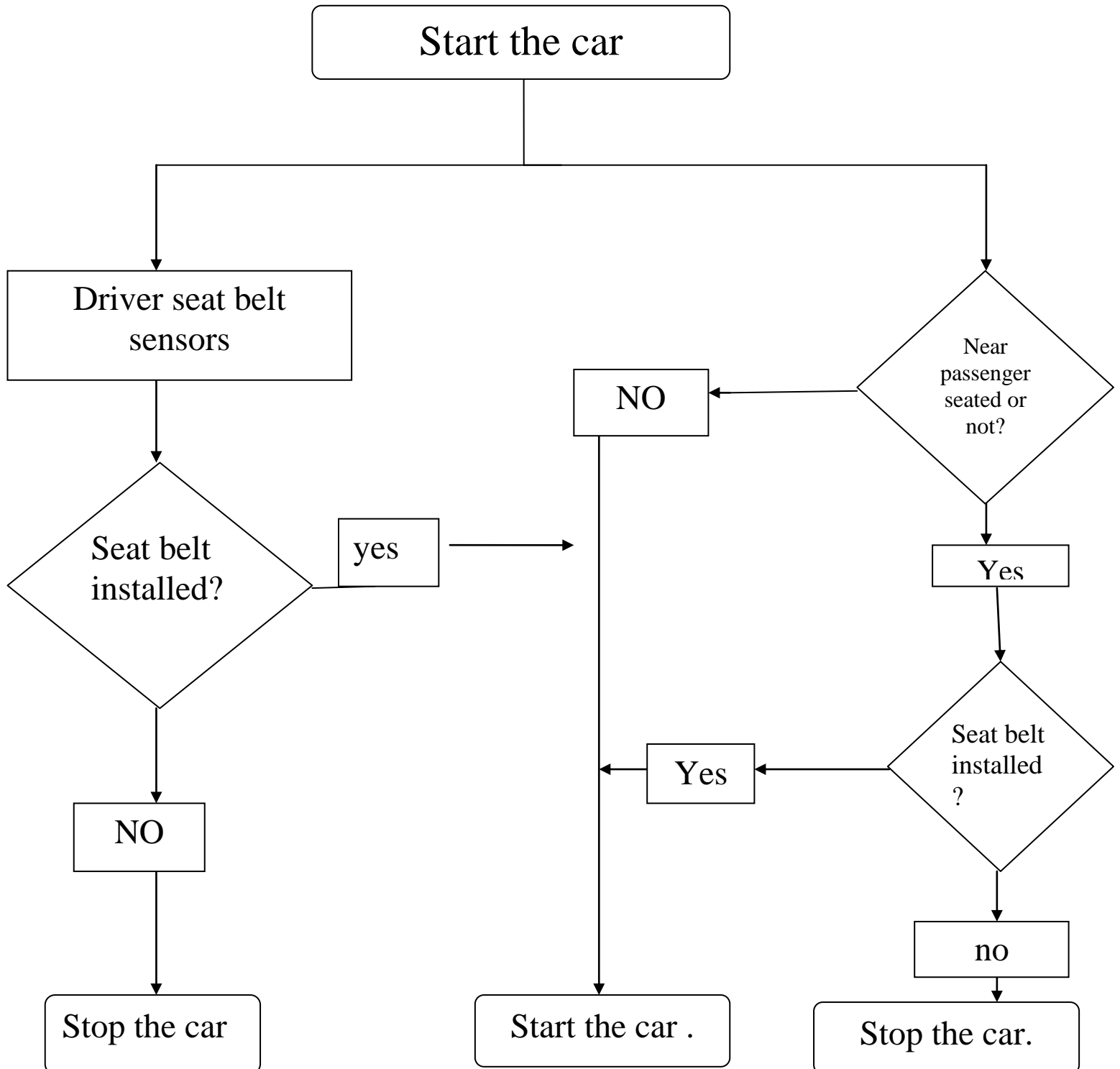
This technique is to detect that the seat belt was installed successfully or not .If the driver tries to start the car the controlling system checks that the driver worn seat belt or not if he / she worn then car will start if no car will not start . then the controlling system checks that the near passenger is seated or not . if nobody was there then car will start . if anybody was seated then the controlling system checks that the person worn seatbelt or not if yes car will start if not car will not start.

III.   HOW WOULD BE THIS POSSIBLE?

This control system can be made by using IR sensors to detect that the seatbelt is installed successfully .These IR sensors are attached with both driver seatbelt and with near seatbelt.
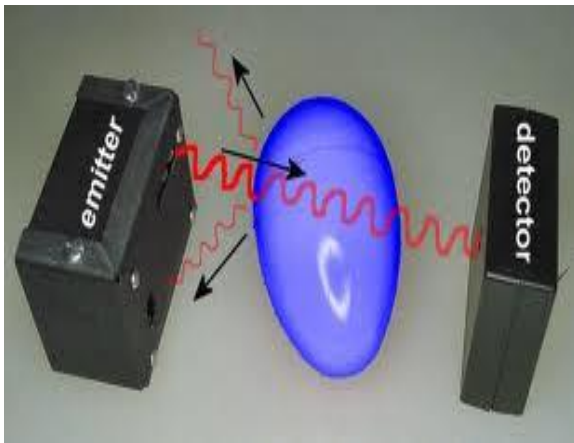
The seat belt is placed between the IR emitter and detector . The seat belt is teared horizontally at the center after leaving some length this helps to receive IR rays from the emitter by the detector to complete the circuit and it is encoded to RF circuit it converts it into radio frequencies . the radio frequencies are transmitted through antenna.

These radio frequencies are received by a receiver and it is decoded to micro controller . Microcontroller is programmed and it is connected with display to indicate to the passengers. And micro controller is connected with ignition system this helps to start the car only if the seat belts are installed perfectly. Microcontroller is connected with a alarm to give alarm to the passengers if they did not installed their seatbelts . below pictures clearly explains the working mechanism of our controlling system

BLOG DIAGRAM

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┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│                 │      │                 │      │    Antenna      │
│                 │      │                 │      └────────▲────────┘
│   IR Sensor     │─────▶│    Encoder      │─────▶┌────────┴────────┐
│                 │      │                 │      │   RF Circuit    │
└─────────────────┘      └─────────────────┘      └─────────────────┘
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                         ┌─────────────────┐
                         │  Power supply   │
                         └────────┬────────┘
                                  │
                                  ▼
┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│    Receiver     │      │                 │─────▶│    Display      │
└────────┬────────┘      │                 │      └─────────────────┘
         │               │                 │
         ▼               │ Micro controller│      ┌─────────────────┐
┌─────────────────┐      │                 │─────▶│    Ignition     │
│    Decoder      │─────▶│                 │      │    system       │
└─────────────────┘      │                 │      └─────────────────┘
                         │                 │      ┌─────────────────┐
                         │                 │─────▶│     Alarm       │
                         └─────────────────┘      └─────────────────┘
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Such a system is used to detect that the seat belt was installed successfully or not for the driver seat . wearing seatbelt for the near passenger is too important . first of all we have to find that the passenger was seated or not for this we are going to place less tension springs from this we can find that the passenger was seated or not .If there is no passenger was seated then car starts if the driver worn seat belt . If any passenger was seated at there then similar controlling system is used to detect that the person was installed seatbelt or not .If that person worn seatbelt and car starts if not seatbelt installed successfully then the car will not start.
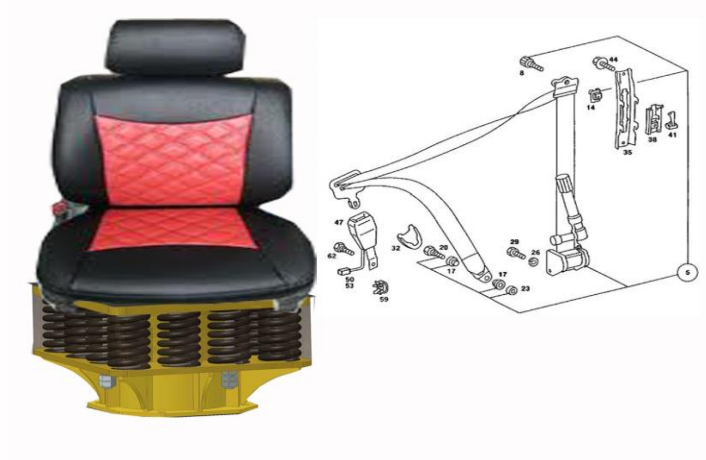
By using such a control system we can avoid the death in accidents . such control system should be used in all vehicles . this control system is very cheap in cost .

IV. CONCLUSION

The road accidents are now proving to be one of major losses of human resources although the accident are not fully solved but the losses from the accident can be avoided by wearing the seat belts. By ensuring the seat belt it can be used very effective in saving the man life.

ACKNOWLEDGEMENT

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