

A LITERATURE REVIEW ON SEAT BELT DURING CAR DRIVING USING HEART BEAT SENSOR

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ABSTRACT

Engine vehicle mishaps have become a significant reason for death and injury since the primary known accident related tenant casualty come about in 1895. Luckily, insights show that the passing rate as far as fatalities per 100 million vehicle miles voyaged has declined from a pinnacle of 24.1 in 1921 to the present 1.7 (NHTSA, NCSA, 1997).^[1] Here created tenant security highlight with an intention to diminish unintentional wounds to inhabitants. In the wake of contemplating number of configuration plans and research papers, there are closed to structure and create safety belt well-being system utilizing sensor. If there should arise an occurrence of mishaps, traveler lives can be spared incredibly by utilization of safety belt and airbags in the autos. The security ramifications of these frameworks and the severe well-being guidelines in the US and Europe have carried a developing business sector to these items. The reason for building up the task is to configuration substitute technique for safety belt security system without changing the accessible space in the vehicle and in addition to give well-being to tenants in those vehicles in which air sacks couldn't be actualized because of increment in cost. The impelling framework configuration incorporates three idea safety belts, sensors, and small scale controller and locking systems.

Keywords: NHTSA, NCSA

1-Introduction

The ongoing consistent decrease in the casualty rate has been the aftereffect of a blend of an assortment of components including vehicle crash security, building advancements, and 1347 improved roadway structure among others. Safety belt is one of the essential well-being highlight utilized in vehicle to maintain a strategic distance from significant wounds to the driver driving the vehicle. Much after the administration standard that is wearing of safety belt is compulsory, incidental wounds increment because of carelessness of tenants in vehicle of wearing safety belt. In the event that safety belt isn't clasped (effectively) than the odds of inadvertent wounds increment. To maintain a strategic distance from these, various organizations discovered assortment of safety belt frameworks, such as, uninvolved safety belt framework, programmed safety belt framework, safety belt cautioning framework, etc.

Along these lines, in this venture are proposed preferable safety belt frameworks over the current ones. This framework contains sensor, smaller scale controller and securing instrument haggle belt. In this framework vehicle drives just when safety belt and entryway are bolted appropriately. As indicated by our estimation this framework can diminish casualty up to 70-80% in contrast with present framework.

2-Literature Review

1. Sunanda Dissanayake Ph.D.2007 has proposed, Effectiveness of Seat Belts in Reducing Injuries, This investigation evaluated the viability of safety belts in lessening wounds and assessed the related monetary advantages utilizing province of Kansas information. The estimation procedure included three phases: I) assessing safety belt viability, ii) evaluating injury decreases, and iii) assessing monetary advantages because of injury decreases. In the principal stage, safety belt viability in decreasing wounds to engine

vehicle inhabitants was evaluated. Crash information from Kansas Accident Reporting System (KARS) database was utilized to achieve this estimation procedure. [2]

2. Nimisha Agrawal 2019 has proposed, An Enhancement to Handle Seatbelt Fastening Practice during Driving using Heartbeat Sensor, In this Research paper we proposed a thought for security of drivers. This examination tried to decide if fitting a progressively forceful safety belt update framework to new vehicles would be cost-gainful for India. In this paper we are proposing to utilize two sensors in safety belt initially is heartbeat sensor and second one is wheel speed sensor. The use of seat straps could thwart extraordinary accident damage to people in vehicle incidents and shield explorers safe from supporting veritable injuries. [5]

3. Alaa K Abbas 2011 has proposed Seatbelts and road traffic collision injuries, Alteration of safety belts and their enactment assumed a significant job in diminishing dismalness and mortality of tenants in street car accidents. They planned to audit safety belt advancement, its instrument of activity and its belongings. Safety belts lessen injury by keeping the inhabitant from hitting the inside pieces of the vehicle or being launched out from the vehicle. They have made a straight relapse connection between's the general safety belt consistence and street traffic demise rates in 46 high salary nations to examine the connection between safety belt use and mortality. There was an exceptionally huge negative relationship between's the safety belt consistence and street traffic passing rates ($R = - 0.77$, $F = 65.5$, $p < 0.00001$). Safety belt related wounds incorporate spinal, stomach or pelvic wounds. [3]

4. Alharbi 2014 has proposed, Evaluations of Relationship of seat belt use between front seat passengers and their drivers, expanded safety belt utilization is a compelling method to decrease fatalities and to diminish the seriousness of wounds supported in car crashes (Evans, 1986). Peterman (2013)

reports that engine vehicle crashes are one of the main sources of avoidable passings in the United States. In 2012 the police-revealed car accident information show that 2.36 million people were harmed and 33,561 individuals were executed all through the nation (Peterman, 2013). According to the National Highway Traffic Safety Administration (NHTSA) (NHTSA, 2008), the likelihood of fatalities or wounds for drivers and their travelers can be reduced by 45 percent to 50 percent in the event that they use safety belts. [4]

3-Statistical study international

Table 1: Study of universal cars fatalities in decade

	2009 Fatalities	2019 Fatalities	Percent Change
United States	15,796	8,234	-47.9%
Great Britain	3,352	1,431	-57.4%
Canada	5,863	2,936	-49.9%
India	75,256	54,792	27.19%
Australia	3,508	1,715	-51.1%

There are present a universal cars fatalities in decade, United States there are car fatalities decreases -47.9% to compare Great Britain car fatalities very much high -57.4%. Canada and Australia car fatalities in decade are little much decreases one is -49.9% and second one is -51.1%. And India cars fatalities in decade are 27.19% mean there is high case in positively increased.

4- Problem Statement

- Passive safety belt is expensive and needs talented individual for establishment reason.
- Automatic safety belt frameworks for the most part offer second rate tenant accident security.
- If the vehicle entryway gets opener than programmed safety belt framework leaves the tenant without belt assurance causing more notable injury or demise.
- Automatic safety belt frameworks likewise present a few operational detriments.

➤ The sound from the notice framework is so bothering to driver that it can cause genuine mishap.

5- Methodology for Solution

There are three sensors attach on safety belt and wheel. There one is load sensor attach at the front and back guards and side skirt of the vehicle. During crash these sensors will be initiated. As these sensors get initiated flow will be halted because of which safety belt lock with be evacuated and wheel lock will be actuated Because of which harmed inhabitant can escape the vehicle with no trouble. Second one is Heartbeat Sensor it is an electronic gadget that is utilized to quantify the pulse such as speed of the heartbeat. One the belt webbing is extended and clasped the individual sensor imparts sign to the smaller scale controller attach under the seat which passes ebb and flow to the wheel locking component. Because of which wheel lock is evacuated, which prompts actuation of clasp lock and subsequently the safety belt clasp gets bolted. An electromagnetic wonder is utilized for locking system.

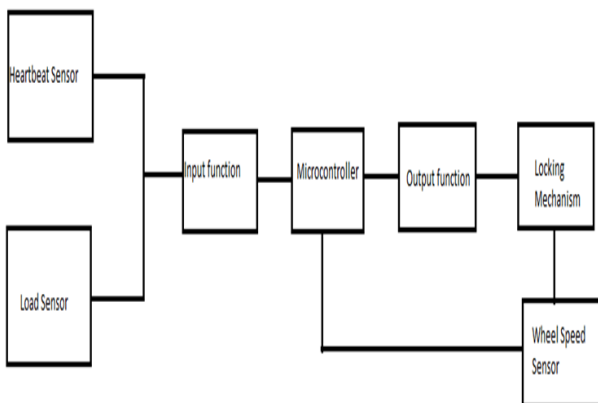


Figure 1: Block diagram of system

There will be load sensor set at the front and back guards and side skirt of the vehicle. During crash these sensors will be enacted. As these sensors get enacted ebb and flow will be halted because of which safety belt lock with be expelled and wheel lock will be actuated. Because of which harmed tenant can escape the vehicle with no trouble. ^[1]

Conclusion

In present day cars, all the vehicles come outfitted with microcontrollers and DSP processors for different detecting and control activities exploiting this marvel. We have built up a component for furnishing drive with greater security through an additional layer of lock close to the safety belt clasp. The driver isn't allowed to drive without the safety belt. This decreases the danger of casualty to the driver and the inhabitants. The start securing is accessible a few very good quality vehicles yet extra bolting framework close to the safety belt clasp, which doesn't allow driver to evacuate the lock while driving is absent in such frameworks. Through our testing we have given instrument to security in any event, during conditions where a driver applies break; the framework can be additionally tried by joining the equivalent in genuine vehicles.

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