

ACC-NILL (Accidents are NILL)

Pranita Sonawadekar, Yogesh Kanaki, Tanmay Ambekar

Students of Department of Information Technology, Vidyalankar Institute of Technology, Mumbai, Maharashtra
Professor. Shashikant Mahajan, of Department of Information Technology, Mumbai, Maharashtra

Submitted: 05-05-2021

Revised: 17-05-2021

Accepted: 20-05-2021

ABSTRACT: With the rapid growth of population vehicles have become an absolute necessity of our daily life. Increasing vehicles causes lots of accidents and loss of life due to late Air Bag ejection reaching to the rescue team and arrival of an ambulance.

Our Project here plays a vital role by making the airbag system more accurate n efficient by ejection them on the most required times and saving the passengers life.

This project also has the intelligence on air bag ejection which is not present in todays vehicles n ie ejecting airbag when n only required according to the vehicle damage ,all further details will be explained in further document.

I. INTRODUCTION

With the rapid growth of population vehicles have become an absolute necessity of our daily life. Increasing vehicles causes lots of accidents and loss of life due to late Air Bag ejection reaching to the rescue team and arrival of an ambulance.

Our Project here plays a vital role by making the airbag system more accurate n efficient by ejection them on the most required & accurate times and saving the passengers life.

This project also has the intelligence on air bag ejection ,which is not present in todays vehicles i.e ejecting airbag when n only required according to the vehicle's hit one another by acquiring the pressure of hit between two vehicles.

It also becomes economically Safe for the customer by not wasting air bag when not required, So our project uses IoT Technology for performing above actions.

II. LITERATURE SURVEY

Abstract Background: The airbags can reduce even 50% of passenger injuries in a car accident. When they are not used properly, they can cause serious injuries. There have been reported several cases with fatal injuries. Aim: The aim of this study was to review the dangers that result

from the incorrect use of airbags. Methods: A thorough review, included bibliography research from both the review and the research literature in different databases was done, such as pubmed, scopus and heallink. Results: Many injuries from airbags have been reported in the literature. Most of them are burns from the produced gases during the development of the airbag.

At the beginning of their use, airbags opened with great speed. As a result there were a lot of injuries. For this reason, it was proposed to reduce the speed of development. Often problems have the eyes and ears. Less frequent are injuries or fractures of the upper and lower extremities. Rarely, cervical spine and ribs injures from the airbag. We found one case report of placental abruption after airbag deployment in a woman driver. On contact with the airbag, passenger can also injure aorta or heart. Conclusions: The airbags provide safety to the occupants of cars and reduce the mortality even at 50%. When not used in accordance with international standards can cause serious injuries. The airbags should always be used in conjunction with seatbelts. Keywords: Airbag, injuries, side-airbag, seat belt.

III. PROBLEM STATEMENT

Problem Definition

The concerns regarding airbag-equipped vehicles generally fall into three categories:

1. airbag(s) did not deploy in the crash where it was expected (by the vehicle occupants) to deploy ('non-deployment' claims)
2. airbag(s) deployed in the crash where they were not expected to deploy and caused injury to the occupants ('unwanted deployment' claims)
3. airbag(s) deployed properly in the crash but did not provide the expected amount of occupant protection ('deficient performance' claims)

Proposed Solution

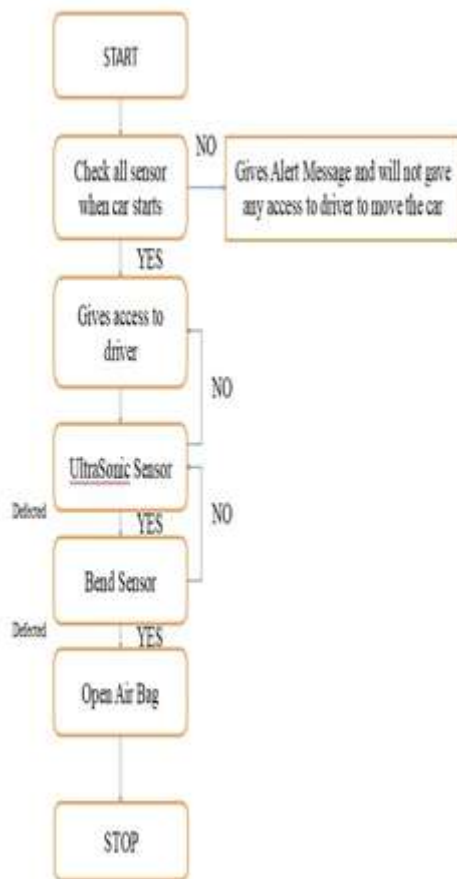
In order to consider these claims, it is necessary to

understand the engineering principles governing airbag deployment and performance.

The Solution of this Problem is by making air bag system more Efficient and accurate ie moto of project by using advanced IoT Techniques.

IV. PROPOSED SYSTEM

Flowchart:



V. HARDWARE AND SOFTWARE REQUIREMENTS

- **Hardware Requirements:**

- Ultrasonic Sensor
- Bend Sensor
- LED's
- Safety Buzzer
- Male to male jumper cables
- Female to female jumper cables
- 7805v Rggulator
- V relay module
- Wheels
- Multi stand wires
- LED modules of 5110 Display

- **Software Requirements:**

- Arduino

- Windows OS

VI. METHODOLOGY

The Proposed Acc-Nill System employs a Efficient and accurate air bag system:

Hardware Modules of our project:

Arduino UNO: The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.^[1] The board has 14 digital I/O pins (six capable of PWM output), 6 analog I/O pins, and is programmable with the Arduino IDE (Integrated Development Environment), via a type B USB cable. It can be powered by the USB cable or by an external 9-volt battery, though it accepts voltages between 7 and 20 volts. In our System it is acting as the brain of the system ,which takes inputs n provide appropriate output.

Flex Sensor: A flex sensor or bend sensor is a sensor that measures the amount of deflection or bending. Usually, the sensor is stuck to the surface, and resistance of sensor element is varied by bending the surface. In our system flex sensor detects the resistance of hit or accident according to which further decision is taken.

Ultra Sonic Sensor: An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear).The role of ultrasonic sensor in our airbag system is to calculate the distance for further vehicles and if the respective vehicle is closure then it notify the user to lower his speed.

Led: Led are used for displaying the system check as well as for showing the status of flex sensor. Green led/Red Led for system check ,white Led for Flex Sensor status.

Airbags: Airbag is one of the main component of our project ,which gets triggered based on input of flex sensor and Ultra Sonic sensor.

6.1 Feasibility Study

A feasibility analysis usually involves a through assessment of the operational (need), financial and technical aspects of a proposal. Feasibility report is the test of the system proposal made to identify whether the user needs may be

satisfied using the current software and hardware technologies, whether the system will be cost effective from a business point of view and whether it can be developed with the given budgetary constraints. A feasibility study should be relatively cheap and done at the earliest possible time.

When a new project is proposed, it normally goes through feasibility assessment. Feasibility study is carried out to determine whether the proposed system is possible to develop with available resources and what should be the cost consideration. Facts considered in the feasibility analysis were:

1. Technical Feasibility
2. Time Feasibility
3. Software and Hardware Feasibility
4. Costing

1. Technical Feasibility:- Technical Feasibility deals with the hardware as well as software requirements. Technology is not a constraint to type system development. We have to find out whether the necessary technology, the proposed equipment have the capacity to hold the data, which is used in the project, should be checked to carry out this technical feasibility.

The technical feasibility issues usually raised during the feasibility stage of investigation include these: This project runs properly.

2. Time Feasibility:-

2. Time Feasibility:-

Sr.No	Milestone Name	Time line (No. of months required to reach milestone)
1	Information search	1-2
2	Requirement gathering	1
3	Analysis and design	2
4	Coding and testing	2-3
5	Final review	1

3. Software And Hardware Feasibility:- Hardware Requirements:

- xii. Ultrasonic Sensor
- xiii. Bend Sensor
- xiv. LED's
- xv. Safety Buzzer
- xvi. Male to male jumper cables

- xvii. Female to female jumper cables
- xviii. v Rregulator
- xix. V relay module
- xx. Wheels
- xxi. Multi stand wires
- xxii. LED modules of 5110 Display

Software Requirements:

- iii. Arduino
- iv. Windows OS

4. Costing:- Our Project is completely software based so not a significant amount of money was required in the development of our project.

REFERENCES

- [1]. <https://www.upgrad.com/blog/iot-project-ideas-topics-for-beginners/>
- [2]. <https://nevonprojects.com/iot-projects/>
- [3]. <https://dzone.com/articles/internet-things-iot-reference#:~:text=the%20reference%20architecture%20must%20include,iot%20project%20and%20system%20requirements.>
- [4]. https://www.researchgate.net/publication/340991802_IoT_Based_MEMS_Crash_Sensor_for_Airbag_System
- [5]. <https://1000projects.org/safety-airbags-in-cars-mech-project-report.html>