Smart Car Accident Prevention (S.C.A.P)



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Introduction

This project is about making cars more intelligent which will notify or resist user under unacceptable conditions, they may provide critical information of real time situations to rescue owner himself. In this paper, we describe a real-time online safety prototype that prevents the starting of the engine in the case of brake failure and warn the user through SMS and buzzer or LED. The main components of the system consist of number of real time sensors like Ultra-Sonic Sensors that can work in any harsh Conditions.



Problem Statement

Cost effective Smart accident alert and Prevention Device and brake failure notification generator.

ROAD ACCIDENTS IN INDIA, 2016

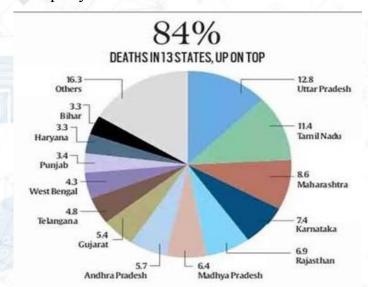
17 deaths on India's roads every hour, Chennai and Delhi most dangerous

Official data show more people died on Indian roads in 2016 than in 2015; UP and Tamil Nadu accounted for the largest numbers of fatalities

BIG NUMBERS EVERY HOUR IN THE YEAR EVERY DAY ACCIDENTS DEATHS ACCIDENTS DEATHS ACCIDENTS DEATHS 4,80,652 1,50,785 1,317 413 55 17

- Largest no of road accidents in India occurs in Chennai over 7,486.
- The most Deaths occurs in Delhi over 1591 due to Unsafe Lane Changes & Reckless Driving.

- Road Crash Statistics Nearly 1.3 million people die in road crashes each year.
- There are 5.6 million car crashes in America every year, so brake failure accounts for about about 300,000 crashes per year.





Hardware & Software



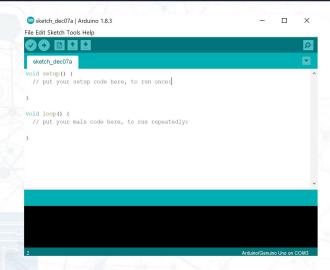












Hardware:

Node MCU, Ultrasonic Sensor, Buzzer, Jumper Wires, Basic Shield, 3 IR Sensor

Software:

Arduino IDE



Proposed Circuit Diagram



3 IR Sensor to detect vehicle from sideways and Back



DO D1 D2 D3 D4 3V3 GND D5 D6 D7 D8 RX TX GND 3V3

HHHHHHHHHHHHHH

WIFI X

MODEL ESP8266MOD X

VENDOR AI/THINKER X

VENDOR AI/THINKER X

FC P3/2 2-4GHz

NSV 2-4GHz

FC P4 +25dBm X

NSV 2-4GHz

PRIRIPHIP

OV ASM ASM EGS ZGS TGS GMO OGS XTO GND EAE N3 LSW GND UIA

HC05 To Detect vehicle approarching from the front.

Buzzer To
Warn the Driver

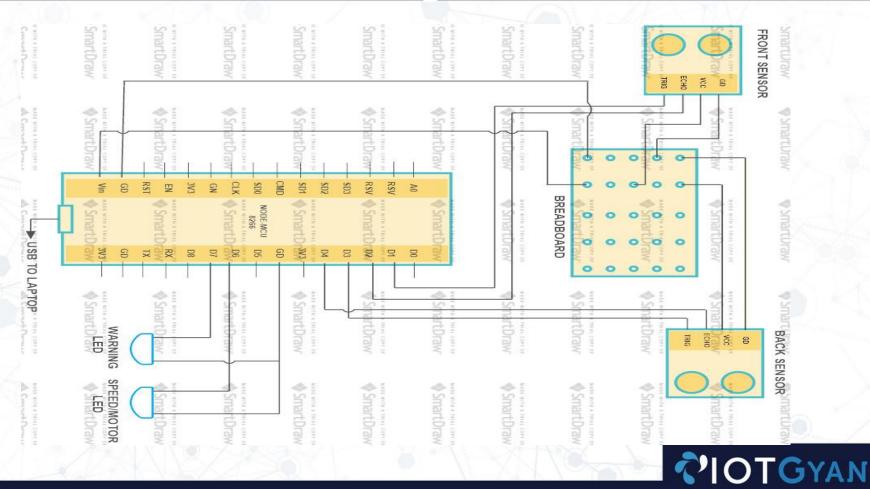
LED To warn about status of Brake

Notification to User About Brake Failure

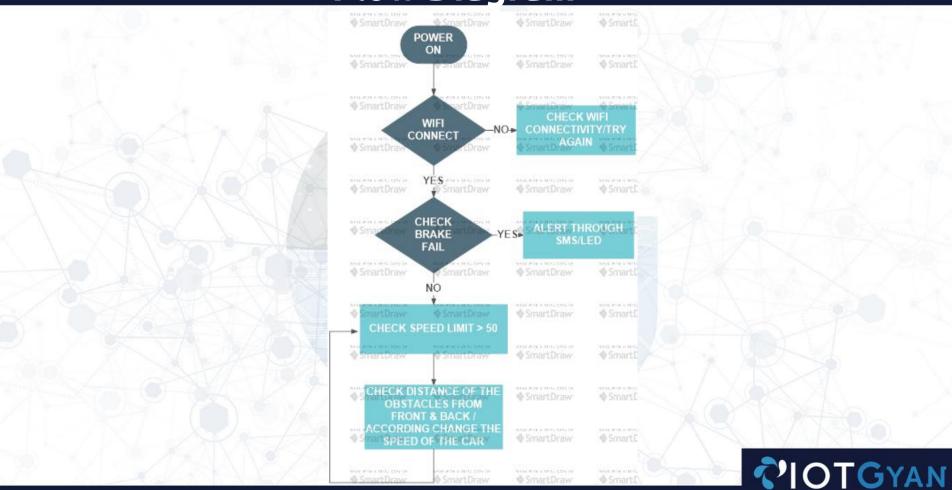




Block Diagram



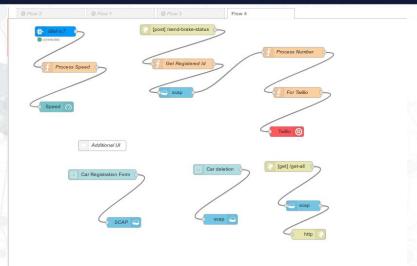
Flow Diagram



Results







23/07/2018 10:28 AM

Call To Mechanic, Brake is not Working Properly

Received by SIM 1



Advantages & Disadvantages

Advantages

- Our main motive to make this project is to reduce road accidents and save life not only the mankind but also the stray animals which accidentally come on the way.
- This will also reduce the accidents in bad environmental conditions like fog, smog.
- Alerts will be helping in gaining the drivers attention back on the road
- Medical and other helps can reach the spot better



Advantages & Disadvantages

Disadvantages

- Drivers may show negligence while driving by over relying on the sensors
- Sudden brakes may lead to internal injuries.
- Failure of sensors may lead to accidents







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