# Safety Toolkit

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Team Undecided

# Overview

To develop a self-contained apparatus consisting of a raspberry-pi and corresponding sensors/cameras to combat various problems like over-speeding and driver-fatigue
To develop a unit that takes care of over speeding  and sleep detection of vehicles.
**The main benefit is that it can be used for any vehicle because it doesn't need to be internally built**

# Goals

1. Combatting Over Speeding -  By asynchronously taking data using OBD protocols
2. Combatting Driver Fatigue - By monitoring the eyes and the mouth
3. Combatting Drunk Driving
4. After-Accident-Response -

# Specifications

## Combatting Over Speeding

The program fetches the location of the car and stores the latitude and longitude as variables, these are then used to fetch the speed limit of the road. The program fetches the speed of the car using OBD protocols and continuously checks it with the speed limit

## Combatting Driver Fatigue

The program constantly monitors the eyes and the mouth of the driver, if for n duration of time the program detects the mouth to be open and the eyes to be closed, it starts beeping

## Suddenly Braking

Informing the authorities as soon as a possible accident occurs

## Combatting Drunk Driving

By utilising the breath-analyser module for the raspberry-pi we'll be able to inform the emergency contact of the driver and inform the necessary authority, if the driver decides to drive even if he is drunk and book a cab

## Combatting Over Speeding

I.    Using the geocoder api, we find out the latitude and the longitude of the card

II.   These values are then used to fetch the speed limit of the road the car is on

III.  Then by utilising the OBD port, we get the speed of the car continuously

IV.   These values are compared continuously, as soon as the car overspeed it emits a warning. Upon repeated violations the details of the car are sent to the authorities

## Combatting Driver Fatigue

I.    Using OpenCV and Dlib, we continuously check the Euclidean Aspect Ratio of the eyes, when it goes down a particular threshold, Beeps are emitted

II.   Along with this, by utilising the zomato api, we fetch the nearby restaurants and the driver is notified that he should stop and is also notified about the address

## Combatting Drunk Driving

I.    Upon the start of the car, the latitude and longitude is cross-checked with nearby liquor or alcohol shop, if a shop falls in this radius, the driver is asked to perform a breathalyser test

II.   If these values are >= 0.08, the driver is notified that he shouldn't drive and that a cab can be booked

III.  If he says anything except 'No', an Uber is booked to the location

## Sudden Brakes

I. If a car suddenly applies brakes, by utilising the twitter API, a tweet is sent which triggers an If this then that applet which notifies the authorities about the possibility of an accident as well as tells the other nearby drivers to be cautious