HALLOTHON 3.0

Auto Tech

idkWhatWe’reDoing

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The Problem

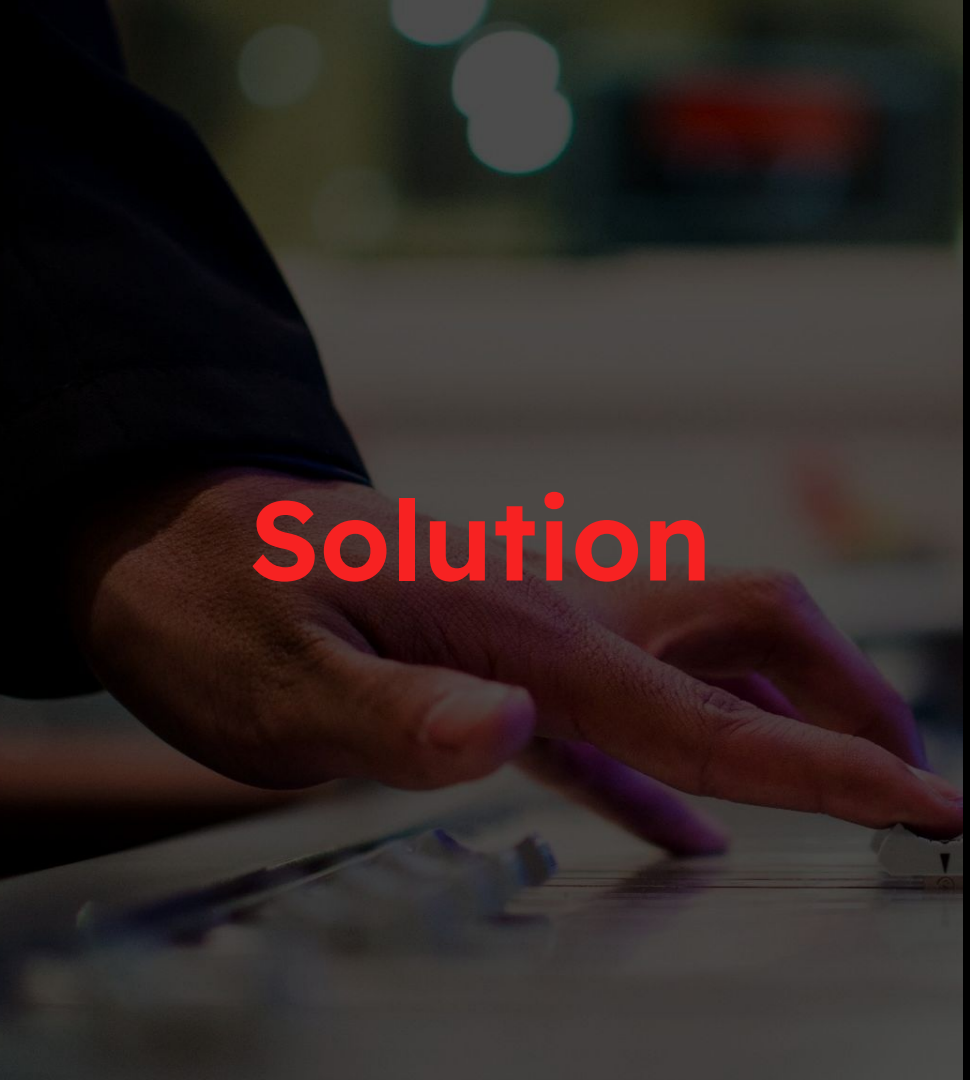
Nowadays driving has become a cumbersome and inconvenient experience for all drivers due to heavy traffic and lots of potholes after the monsoon season.

The intensity of threats posed by accidents is simply disastrous.

Metropolitan cities, including Bengaluru, have showcased a dismal performance in tackling problems related to road accidents.

There is no existing technology that detects the occurrence of accidents and alerts the concerned authorities

To determine if an accident has occurred using a Machine Learning Algorithm incorporating a digital motion processor and an integrated GPS unit



Solution

A digital motion processor and an integrated GPS unit will be attached to vehicles through which road quality information is obtained.

This information can be used to suggest appropriate paths to drivers for a better driving experience and lesser congestion.

Further by incorporating Computer Vision and using numerous filters and a convolutional neural network for detecting accidents from images we will get a higher accuracy in detection of accidents.

A dashboard which contains a map to identify the accidents and display details regarding the same

How it works

Step 1

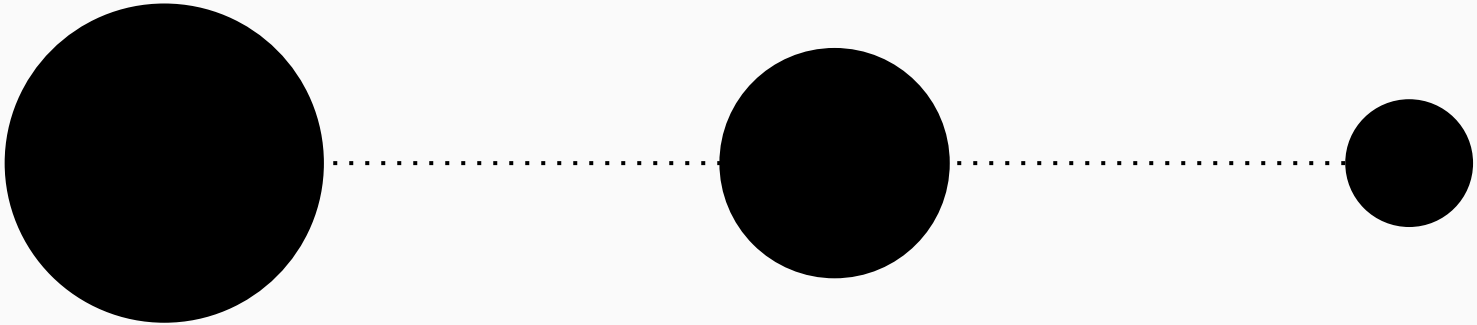
Make a model car

Step 2

Perform calculations to detect an accident using ML,image processing and motion sensor.

Step 3

To display the results on the dashboard using Google Map SDK.



Tech Stack Used:

Hardware

1. Sony Spresense
2. MPU6050 Accelerometer
3. Raspberry Pi 3b+
4. Raspberry Pi Camera
5. Car Chassis
6. Led and Buzzer
7. 5v Power Supply

Software

1. Website built using ReactJS.
2. Firebase Realtime Database.
3. Google maps to draw the heatmap and path finding.
4. Edge Impulse
5. Arduino IDE
6. Vertex API
7. GCP Cloud Functions
8. Twilio

Feasibility

- With our user friendly website it will be very helpful to route through accident prone areas.
- Our solution can be scaled up by getting in touch with the local authorities and other transport industries.
- Our solution will help to minimize casualties and help first responder to take prompt action

Business Applications

Insurance companies can offer usage-based insurance policies that adjust premiums based on the driving behavior detected by the accident detection system. This can attract safer drivers and reduce the number of claims.

Companies offering ridesharing or taxi services can use the system to monitor driver behavior and ensure passenger safety.