Idea/Approach Details

Ministry / Organization Name: CDK Global
Problem Statement: Better and faster emergency care during accidents and vehicle impact.
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Understanding of Problem Statement:

1. Road accidents is one of the prime reasons due to which people lose their lives.
2. According to Journal of Mobile Networks and Applications, an important indicator of survival rates after an accident is the time between the accident and when emergency medical personnel are dispatched to the scene.
3. The solution should detect occurrence of accident, type of accident, location and notify emergency services with the information along with providing visuals of the situation at the accident scene.
4. The solution should be easy to integrate, with minimum OEM dependence which would allow it to be leased out in accident prone areas.
5. Additionally it should aggregate the information it collects and provide reports to concerned authorities.

Proposed System:

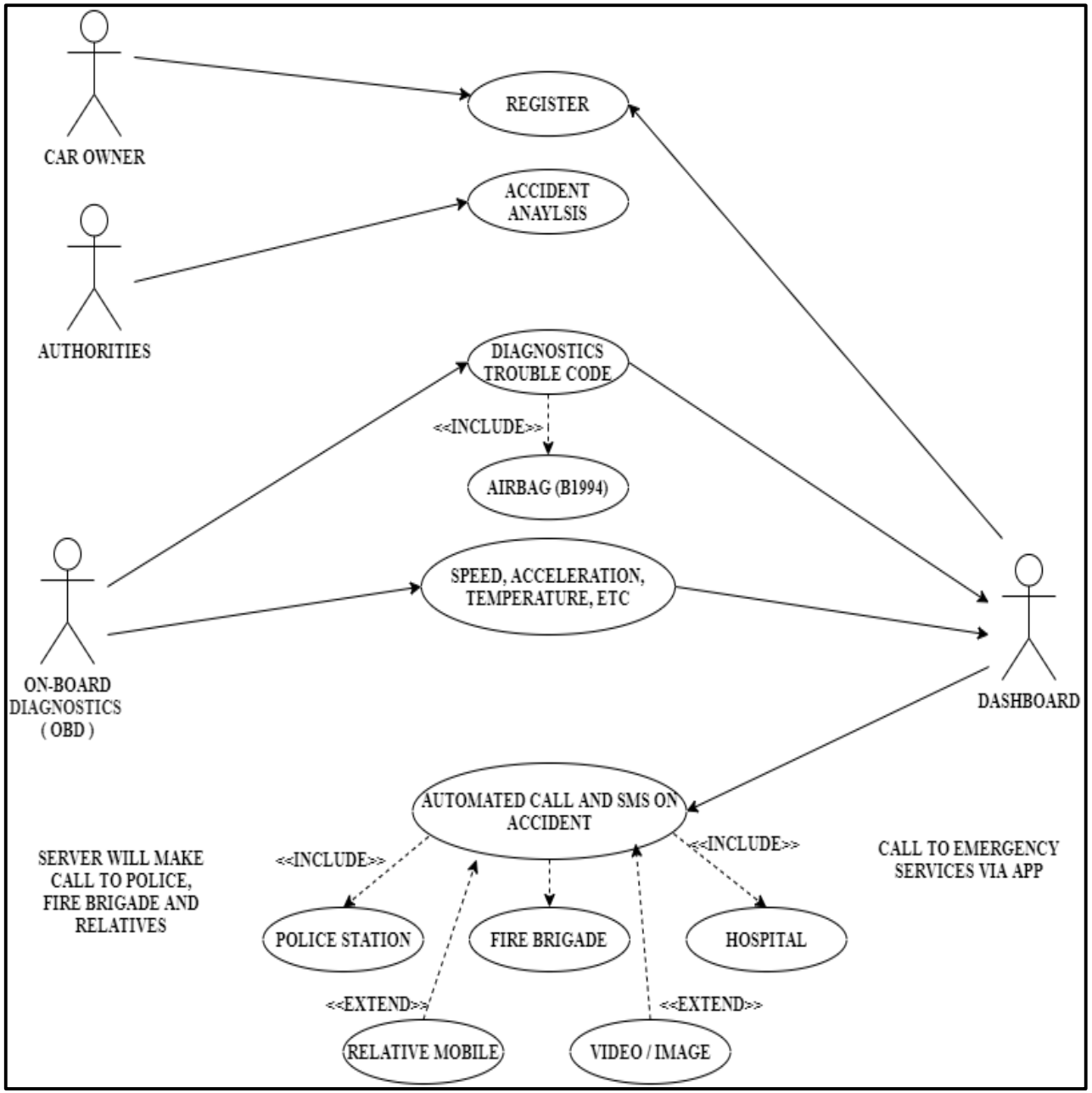
1. The system will primarily be a software as a service solution using information from car OBD, accelerometer, gyroscope and cameras.
2. An accident will trigger our system to execute sequence of actions such as calling emergency services, relatives, broadcasting accident video and sharing accident details like accident type, location, severity, etc. via call, SMS and a webpage.
3. The event of occurrence of accident will be generated by detecting the signal sent to deploy airbags. We will also process data from above mentioned sources to detect accident in our system using machine learning.
4. This system can be installed in the infotainment system of the car or also be installed in user’s smartphone or tablet and mounted on the dashboard.
5. System will also be used for identifying accident prone zones and provide visualization of various data collected by the system.

Use Case Description :

Normal Flow:

1. Car owner will register himself/herself on the portal using Android App.
2. Authorities will get analysis report of accidents happened, accident prone areas, etc.
3. On-board Diagnostics (OBD) will send diagnostics trouble code which include Airbag Code (B1994) along with speed, acceleration, temperature, etc. to android app.
4. On accident occurrence, App will place an automated call to emergency services. App will broadcast Video/Images of the accident scene to the server if possible. Server will also send SMS to the relatives.

Use Case Diagram :



Technology Stack:

1. Android Studio
2. Python
3. MongoDB
4. PHP
5. NodeJS
6. Bootstrap
7. JavaScript
8. Java
9. CARLA Simulator
10. AWS Lambda
11. Twilio API
12. MySQL Database
13. AWS S3

Dependencies:

1. Mobile Network
2. Server
3. Android Device
4. OBDII
5. Emergency Services