TEKNOFEST

AEROSPACE AND TECHNOLOGY FESTIVAL

TECHNOLOGY FOR HUMANİTY COMPETITION

PROJECT DETAIL REPORT

PROJECT CATEGORY: Smart Transportation Competition

PROJECT NAME:GSM and GPS based vehicle accident detection system

TEAM NAME: Springfield isotopes

TEAM ID:T3-24475-203

TEAM LEVEL: Primary

TEAM MEMBERS:

- Aqsa Hasnain
- Huda Jamal

ADVISOR NAME:

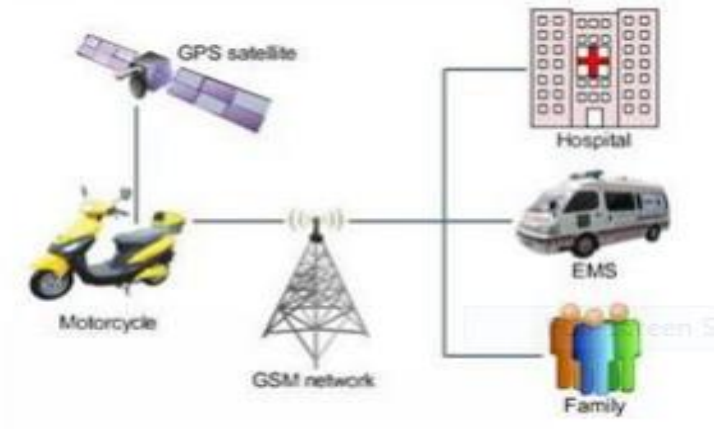
- Maria Qaiser
- Atiqa Wajed

Detailed Evaluation Report

1. Project Summary

This project proposes a solution for the people who die due to road accidents when they are deprived of immediate first aid or rescue team. The system deployed in the car will automatically send accident location and a video recording of one minute to show the level of damage to the car to the nearest hospital so that assistance can be provided to the severely injured people in the car. This project provides a most feasible ad optimum solution to the people affected road accidents as there are poor emergency facilities available for them. In this project we are going to use an accident detection unit which will be fitted inside the front and rear bonnets of the car. This accident detection unit consists of two metallic plates which are kept at little distance apart from each other. In case of an accident, if the car hits some other vehicle or an object then due to the impact the two metal plates will come in contact. A signal resulting from this will be sent to the microcontroller. The microcontroller is the CPU (central processing unit) of our project. Once the microcontroller gets signal from metal plates, it will immediately turn the buzzer 'on'.

The Microcontroller receives the coordinates from the GPS modem. Then it will send this information to the GSM modem. The GSM modem is used to send this information via SMS. SMS will be sent to the family member of the driver, so that they can take immediate action to help the person who is suffering in this accident.



2. Problems

The possibilities of road accidents are just increasing day by day. Furthermore, people have also become more careless now, not many people follow the traffic rules. Especially in big cities, there are various modes of transports. Moreover, the roads are becoming narrower and the cities have become more populated, but the main reason of vehicle accidents can be because of harsh driving. In many situations the family members, ambulance or the police authorities are not informed about the accident on time, because of the accident happening on strange timings. This

results in delaying the help from medical staff which can make the person suffers from the accident.

3. Solution

Our project GSM & GPS based accident detection system will be used to help people who have gone through the state of accident by quickly sending their location and a video recording of the car to the nearest detected hospital or rescue teams. The video will help the rescue teams or hospital emergency staff in identifying the critical situation of the people involved in the accident.

4. Method

This project consists of following components:

- Microcontroller
- Ultrasonic Sensor
- GSM module
- GPS module
- XBee 2mW Wire Antenna
- Raspberry Pi Camera Board

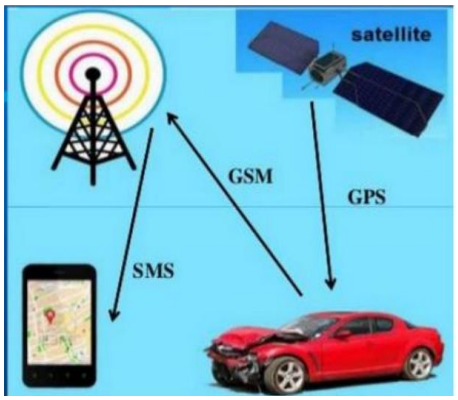
1. Our project will also consist of a Micro-controller which will receive coordinates from the GPS modem.

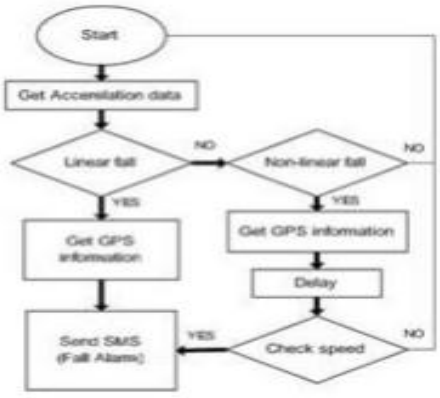
2. Then the GPS modem will deliver the information to the GSM modem.

3. The GSM modem in our project is used to send the information (video and location) regarding the accident through SMS.

4. The SMS will be sent to the family members of the person who is driving or the owner of the car, so that they can take immediate action to help the person suffering due to this accident.

Following diagram shows a detailed methodology of the system:





Innovative Aspect:

- Alerts family, police and medical units about accidents.
- Simple design and can be interfaced with other systems.
- Easy to operate.
- Reliable system.
- Sophisticated security.

The previous related work does not include video message of the accident however this solution will provide both location coordinates and a one minute video message of the accident which will help in analyzing the severity of the accident and also guides the hospital staff to do the necessary arrangements such as arranging blood etc.

7. Estimate Cost

Sr. No	Description	Price (USD)	Unit	Total
1	Arduino Microcontroller	$23.00	1	$23.00
2	UltrasonicSensor HC-SR04	$3.95	4	$15.80
3	SIM 808 GSM/GPS	$39.99	1	$39.99
4	Xbee 2mW Wire Anteena	$24.50	2	$49.00
5	XBee USB Adapter USB Communication Board	$6.99	2	$13.98
7	Raspberry Pi Camera Board	$32.15	1	$32.15
	Total			$173.92

8. The Target Group of Project Idea (Users)

Road accidents have become very common nowadays. Every year thousands of people los their lives to road accidents. Thus, road accidents are bound to happen. You pick up a newspaper and you will find at least one or two news about road accidents daily. They cause loss of life as well as material. People need to be more careful when on the road, no matter which mode of transport they use. The emergency facilities are also to very good o roads therefore this project will help the people who undergo a road accident and it will also help rescue teams to reach the correct location with necessary arrangements.

9. Risk

Flowing are the limitation of the project:

a) Availability of the required components, which are desired for the developed of this project.

b) The estimated cost might vary as this has been estimated through internet and prices might be different on ordering.

c) It's also very crucial to create a project which is compatible to various vehicles systems. The project needs to be portable, which gives expected results on all vehicles or at least on a number of vehicles to make this idea look more realistic and practical.

d) Testing of the project on real world scenario will also be a difficult task.

10. Project Team

Name Surname	Mission In The Project	School	Project or problem related experience
Aqsa Husnain	Team Leader/ Programming & Presentation	Pak-Turk Maarif International Schools & Colleges	Beginner
Hida Jamal	Assemblage & Execution	Pak-Turk Maarif International Schools & Colleges	Beginner

11. Reference

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