INTELLIGENT BRAKING SYSTEM FOR AUTOMOBILES

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Keywords :
   GPS, Geo-fence, Sensor, Zones, Pneumatic etc.

Introduction :
   Road accidents are increasing day by day. With this loss of human lives and injury is also increasing. The death rate due to road car accidents in India is increasing day by day. With more than one death and four injuries every minute, India has the dubious distinction of reporting highest number of road fatalities in the world and the government says the prime reason is "drivers' fault". During the previous years, there were around 490,000 road accidents, which resulted in the deaths of 125,660 people and injured more than five hundred thousand persons in India.

   The Major cause of road accidents due to collision is the drink and drive situation. If the driver is drunk, he usually loses the control over the vehicle and this results in collision. This is not only dangerous to the driver’s life but also may take the life of the person if the car collides with the person. Also over speeding is the major cause of accidents due to car collision. The over speeding driver is totally unaware and uncertain of the situations which may arise and may result in unexpected collision if the driver is unable to maintain the control over the car at that speed.

   Thus whatever the cause of collision of the car there is the need to develop an efficient system which automatically detects the obstacle in the path of car at particular distance and then if the distance crosses the particular threshold then it automatically brakes the car which can avoid the collision and also possible life injuries.

   Thus to solve the problems stated above the project deals with the concept of Intelligent Braking System which uses Intelligent Geo-Fencing System to limit the speed in specific speed limit areas and automatic collision avoidance pneumatic braking systems to prevent accidents.

Objectives :
   1) The develop an GPS based Intelligent Braking system which will use smart Geo-Fencing techniques to determine the various speed limiting zones set up by the government and set the speed as per the Speed limit
   2) To Develop an anti-collision system where the vehicle automatically applies the brakes when the vehicle is about to collide by sensing the objects in the vicinity.
   3) To implement pneumatically actuated braking system to increase the response time
   4) To demonstrate the above concepts by developing a vehicle prototype which can be controlled using a remote.
   5) To make the system feasible and practical
Methodology:
1) The Literature review
2) The vehicle chassis fabrication
3) The Drive train
4) Pneumatically Actuated braking system Fabrication.
5) Intelligent GPS based Speed Limit Assignment
6) Smart Sensor based automatic braking System
7) The Remote control vehicle prototype Fabrication
8) Assembly and testing

Materials:
ERW Steel Pipes, GPS Sensor(Ublox Neo 6M), microcontroller board, 433 Mhz tx/rx RF module, motor driver, dc Geared motors, joystick module, SONAR sensor, Pneumatic Brake(which include Piston and cylinder), etc..

Drawings and diagrams:
Future Scope and Conclusion:

From the above project it can be concluded that the proposed project can serve as a automatic speed regulation system to avoid violation of traffic rules. The people who do not follow the traffic rules can be made to follow the same by strictly implementing GPS based speed control system. This not only detects the zones of speed on its own but also implements the Speed regulation with respect to the zones. Also Pneumatic braking system can automatically detect the zones in its path and brake the vehicle. automatic speed locking and unlocking in vehicles using advanced wireless zone intimation system. The proposed systems detects the speed limits zones provided by the government and locks the upper speed limit of the vehicles to the one mentioned by the government . Thus the system helps over speeding in low speed zones thus preventing accidents. The proposed system also implements accident prevention using obstacle detection which will adjust the speed of the vehicle with respect to external conditions. Thus from the above project it can be concluded that the proposed system will help automatically for all cars to follow the speed limits by automatically locking the speed limits according to the speed zones.

The project however can be made more advanced in future. The project can be incorporated with intelligent by implementation of computer vision based speed detection zones rather than GPS as gps has low accuracy.