Accident Controlling For Vehicle Using Haptic Technology

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Abstract - ***The accident controlling for vehicle using Haptic technology is used to protect vehicle and life from accidents. Now a day's accident is very usual, the vehicle is don't have protection to prevent the damage to the vehicle and human. The accident controlling using Haptic technology is a system which is installed inside the vehicle, and when the vehicle comes to collide with another vehicle or human or animal or tree or something having mass, the system will give force to damp the speed of both the vehicles without making the vehicle damaged. The accident controlling for vehicle using Haptic technology, tracks objects and mass using sensors. The Haptic technology is used for the force feedback. That is, haptic technology is used to control the force of the vehicle and the objects having mass. The accident controlling for vehicle using haptic technology uses camera to identify the object and uses video processing algorithm and background subtraction algorithm for the object tracking. The accident controlling using haptic technology will act as a invisible shield to protect vehicle and the object with mass, which come on the way of the vehicle. While giving damping force, the accident controlling for vehicle using haptic technology will ensure the vehicle or the object with mass are not damaged from the damping force. The damping force is depend on the speed of vehicle, speed of object, mass of vehicle, mass of object and the distance between the object with mass and the vehicle. If all vehicles in this world uses the proposed accident controlling for vehicle, then, the accident rate can be reduced from large to very small. Therefore, the number of people death due to the accident can be greatly controlled by using this accident controlling for vehicle using Haptic technology.***

Key Words: *Haptic Technology, Object, Background Subtraction algorithm, Video Processing, Object mass, Object Tracking*

1. INTRODUCTION

The Accident controlling using Haptic technology is a special type of system used to minimize the accident rate.

In India, the accident rate is increasing year by year. The sample chart shown in 'chart -1'. The proposed system follows the Newton laws of motion for implementing the force mass relation and controlling the acceleration and force of the vehicle and the object for avoiding accident. The system will calculate the force using force sensors and Zigbee chips. The camera is used to track and identify objects. When the object is detected, the system will sense the force and acceleration of the object using Newton laws and force sensors. The result will be passed to the Haptic device using the Zigbee chip. The Haptic device will produce force capable enough to damp the acceleration of the object and vehicle. The device is fit in four sides of the vehicle to give all direction protection to the vehicle from the accident.

[1]According to Newton:

$$\mathbf{a} \propto \sum \mathbf{F}$$

$$a \propto \frac{1}{m}$$

$$\sum F \propto m$$

$$\mathbf{a} = \frac{\Sigma_m \mathbf{F}}{}$$

2. METHODS

The Accident controlling using Haptic technology is a special type of system used to minimize the accident rate. The different methods used under the proposed system are:

2.1 Accident

Accident is unexpected incident which may cause damage or injury or both. The accident may affect life. Lots of people have already loss their life due to accident. The main aim of the proposed system is to

avoid or minimize the rate of accidents and thereby reducing the numbers of death due to accident.

2.2 Haptic Technology

Haptic Technology is a special type of technology used specially for the force feedback applications. The Haptic device used in this accident controlling for vehicle using Haptic technology uses the ultra high rigidity carbon fibers and low mass aluminum component. It provides maximum stiffness with minimum inertia. High performance motor is used to make force.

2.3 Video Processing

A camera will be used for detecting the object. The features of the camera are, it can rotate 360 degree. So the objects in all directions can be detected. Video processing is used to identify the object. Background subtraction algorithms are used to highlight only that particular object to apply damping force.

3.4 Object tracking

Object tracking methods are used to track the objects using the camera installed in the vehicle.

3.5 ACCIDENT CONTROLLING USING HAPTIC

TECHNOLOGY

When the vehicle come to collide with another object, the Haptic device will release the forces produced based on the detected force of the object and the vehicle. the Fig -1 shows an example of the accident controlling using Haptic technology. The table -1 shows an example accident statistics for a country during years 2000 and 2005.

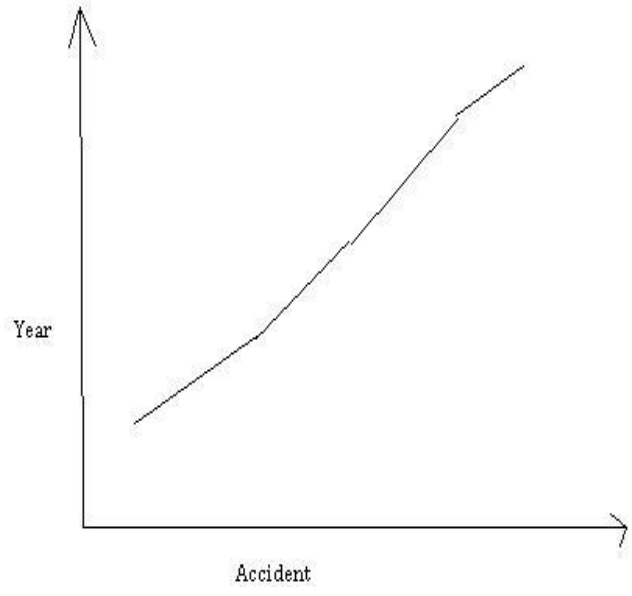

Chart -1: Year-Accident Graph

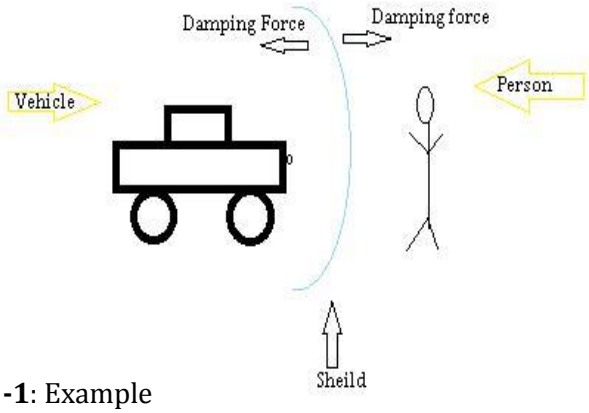

Fig -1: Example

Table -1: Sample Accident Statics

Year	Death
2000	24%
2005	31%

3. CONCLUSIONS

The proposed accident controlling for vehicle using Haptic technology is not only used to protect vehicles, but also the people from the accident death. Thus the proposed system makes a revolution to the security of life and vehicle from accident. Therefore, accident and death can be minimized.

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