The Road Safety Alarm System and Track Predictor

Aditya Prakash	Anjul Kumar Tyagi	Yash Choubey	Manu Sharma
201351010	201352029	201351006	201351021

Abstract

This project is about predicting and warning the user about any accident prone situations beforehand while driving. The accident prone situations include the upcoming speed-breakers and pot-holes etc in the direction the user is driving. It also predicts the upcoming topology of the road in the direction in which the user is driving. We are developing an android application for this. This report contains preliminary findings about the sensor readings from the mobile which can help the user while driving and what are the traffic and road parameters that can be manipulated using the mobile sensors.

Introduction

Android has various sensors that can help us depict the nature of the road and store the data on a server. When the user switches on his GPS, we can get his location and use the data from the server to predict the nature of the road on which the user is moving. Also there are various parameters of the road like the speed-breakers, the pot-holes which can be derived from the accelerometer data recorded from the driver's mobile[1]. Other parameters include the terrain of the road. Suppose if the sensors are showing constant vibration of the device, then we can say that the road terrain is bumpy and the road isn't smooth.

Parameters which can be determined using mobile sensors

- Rough terrain
- Detect the speed-breakers and potholes
- Differentiate between the different types of speed-breakers
- Sharp Turn on a straight road by the vehile indicating a barrier on the road like a mountain slide on hilly areas or a public gathering.

Sensors to be used in the application

- Accelerometer : To determine the speed-breakers, pot-holes and rough-terrain.
- Rotation-vector : To determine a sharp turn by the vehicle.
- Other sensors like gravity, gyroscope, linear_acceleration, orientation, magnetometer etc to give more readings if required.

Conclusion

Using these paramteters and sensors, we can deterime and warn the driver about speed-breakers, pot-holes, some barrier on the road or an upcoming bumopy road. These are only the preliminary findings.

Future Work

We will determine how this system will work and build an android application using server-client model to predict the parameters. We have to learn how we can manipulate the data from the sensors to actually know where the speed-breakers or pot-holes lie and the same for other parameters too.

References

[1] Speed Breaker early warning system by Mohit Jain and Soshant Bali.