The issue of difficult road and traffic conditions in india

Parts of the World, Asia

India is the world's largest democratic republic. With the advancement of Transport Systems, countries are identified on the basis of their " Roads". Nowadays road accidents are major issue in most of the counties, one of the reason of road accident is due to irregularities of the road surface and high speed of driving. India has difficult road and traffic conditions. Traffic jam, safety issues, rash driving, lawlessness and increasing load of vehicular traffic are decreasing the quality of road. Roads normally have humps so that the vehicle speed can be controlled to avoid accidents. In order to eliminate the potholes on the road, several researches have been done.

Pavement distress detection is an intriguing topic of research and researchers have been working on pothole detection techniques. This section gives a brief description about the existing solutions for detecting potholes and humps on roads. Moazzam et al. have proposed a low cost model for analysing 3D pavement distress images. It makes use of a low cost Kinect sensor, which gives the direct depth measurements, thereby reducing computing costs. The Kinect sensor consists of a RGB camera and an IR camera, and these cameras capture RGB images and depth images. These images are analysed using MATLAB environment, by extracting metrological and characteristic features, to determine the depth of potholes. Youquan et al. developed a model to detect the three-dimensional cross section of pavement pothole. The method makes use of LED linear light and two CCD (Charge Coupled Device) cameras to capture pavement image. It then employs various digital image processing technologies including image pre-processing, binarization, thinning, three dimensional reconstruction, error

analysis and compensation to get the depth of potholes. However, results get affected by LED light intensity and environmental factors.

Lin and Liu have proposed a method for pothole detectionbased on SVM (Support Vector Machine). This method distinguishes potholes from other defects such as cracks. The images are segmented by using partial differential equations. In order to detect potholes, the method trains the SVM with a set of pavement images. However, the training model fails to detect the pavement defects if the images are not properly illuminated.

Orhan and Eren have proposed a work developed on android platform to detect road hazards. There are three components in this proposed work viz, Sensing component, Analysis component and Sharing component. The sensing component basically works by collecting raw data from accelerometer and synchronizes with interface, hence leading to ease of access. In analysis component, the values obtained from the sensors are used for developing analysis modules. The sharing component works as follows: the developed framework is connected with the central application, where it can directly communicate with the social network.

All the collected data is stored at central repository for further processing. Although this method communicates traffic events with other drivers, it increases the cost and complexity of implementation.