

Geophone Accident Prevention System

Deepak Singh

Department of Electronics & Telecommunication
Shri Govind Ram Sekasaria Institute of Technology & Science, Indore (M.P), India

Abstract: According to the Annual Global Road Crash statistics nearly 1.3 million people die in road crashes each year, on average 3,287 deaths a day. An additional 20-50 million are injured or disabled out of which 20% accidents take place at the zebra crossing. This paper introduces a scheme for prevention of these accidents, for this firstly a geophone will be broached at the pedestrian accident prone area. Here the ground movement is converted into electrical voltage which is recorded and sent to traffic system recording station. Now, the recording station is synchronized with the traffic light which is in the close affinity of the accident prone area, which will display a specific light for each case for example, a red light will be used to show the drivers that there are crowded pedestrians and the imminent junction.

Keywords: Geophone; ZEBRA crossing; accident prone area; traffic system recording station; sensor technology; electric voltage.

1. Introduction

This paper deals or involves a system which is used to prevent the pedestrian accident or ensure their safety through a sensor technology .here the sensor used is a Geophone which identifies the high risk areas or the accident prone areas such as schools, zebra crossings etc. A pedestrian crossing is a place designated for pedestrians to cross a road. They are designed to keep pedestrians together where they can be seen by motorists, and where they can cross most safely across the flow of vehicular traffic but instead pedestrians are more prone to accidents in these places now more than ever. Thus by introducing a system which brings together the sensor technology and traffic light management system the drivers can be made more aware of the fact that a pedestrian crossing is imminent. The paper thus focuses on the idea of safe traversal of pedestrians through the use of a sensor technology and traffic management system which will intern control or prevent the road accidents through means of traffic signals.

from Greek word, 'Geo' means 'Earth' and 'phone' means 'sound'. It is classified to be a passive device responding to ground displacement which is proportional to the Geophone velocity. The geophone accident prevention system mainly consists of two crucial steps:

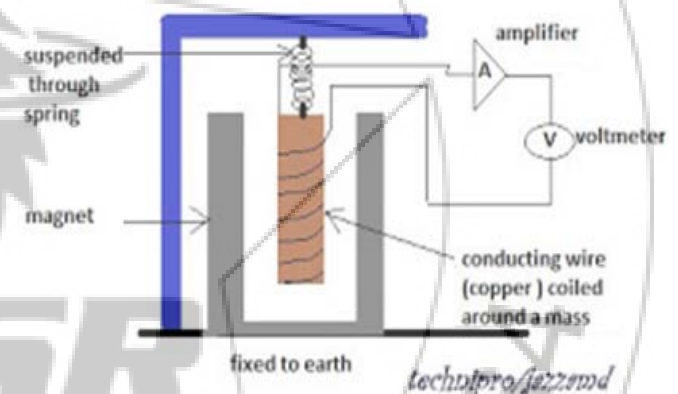


Figure 2: Working of a typical Geophone

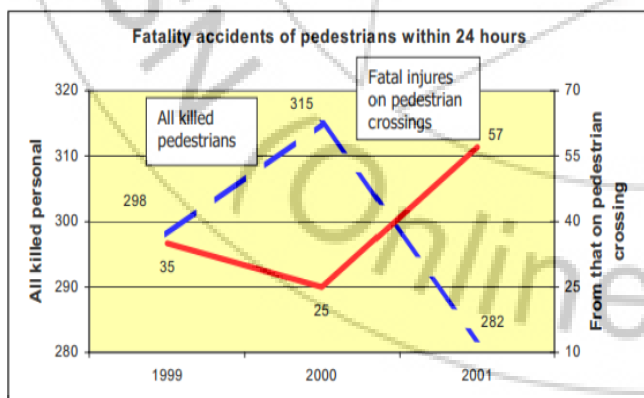


Figure 1: Statistics of pedestrian accident (Data collected from the 15th ICTCT Workshop, speed related research and analysis)

2.1 DATA recording at High Risk Areas

Geophone is a device which gives electrical output corresponding to the ground movement i.e., converts seismic energy inputs or the pedestrian movement into electrical voltage ,a easy to measure and record quantity the electrical voltage or signals thus created are then passed on to the traffic system recording station of the nearby area. Now at the installation base of the geophone (i.e., at an accident prone area or a zebra crossing) the electrical voltage or signal is transmitted to the recording station either by the means of small scale implementations (say physical channels) or by the means of large scale implementation (i.e., by installing a satellite).

2. Description

The sensor technology consists of or involves the use of geophones installed at the accident prone areas. It is derived

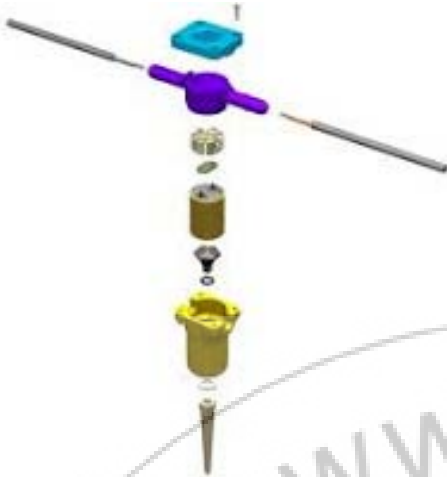


Figure 3: Geophone practical application

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2.2 Delivery of data at traffic control system

Now, the other crucial step is the delivery of data. At this stage the combination of two data are taken i.e. the data from the traffic system recording station and the data from the traffic light system. Here the driver is made aware of the imminent pedestrian crossing or the accident prone area by the use of traffic lights. By this the driver gets a rough idea about the crowd and gets enough time to control the speed of the vehicle.

3. Conclusion

The paper broaches a very pragmatic idea or method of accident prevention of the pedestrians through the use of a sensor technology. This will help alleviate growing rate of pedestrian accidents which occur due to carelessness of the drivers. The geophone accident prevention system will reduce accidents by making the drivers aware and help them to forestall any hideous accident through the use of traffic lights.

4. Future Scope

The paper focuses on a broader aspect and a different way of prevention of accidents. It helps dealing with the issue of emerging rate of accidents and controlling it by making the drivers pre-informed about the impending pedestrian crowd. Since the sensor technology used here i.e., Geophone is cost efficient, the whole GAPS becomes very economical. To summarize this system will lower down the increasing death rate of pedestrian due to road accidents.

References

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