

Detection Of Sudden Pedestrin Crossing And Avoidance Of Vehicular Crashes

U.Aiswarya¹, G.Keerthi², S.Kumaran M.E., (Ph.D)³

¹(UG Students, Department of Electronics and Communication Engineering, Dhanalakshmi Srinivasan College of Engineering and Technology, India

²(UG Students, Department of Electronics and Communication Engineering, Dhanalakshmi Srinivasan College of Engineering and Technology, India.

³(Assistant Professor in Department of Electronics and Communication Engineering, Dhanalakshmi Srinivasan college of engineering and Technology, India.

Abstract: Considered as a weak point in road and railway infrastructure, improving level crossings (LCs) safety became an important field of academic research and took increasing transport undertaking concerns. Improving the safety of people and road facilities is an essential key element to ensuring good operation of the road transport. Statistically, nearly 44% of LC users have a negative perception of the environment, which consequently increases the risk of accidents. For example, when an accident occurs, the transport operator waits for a road user noticing the accident at the LC premises to warn the traffic centre that something bad is happening at the LC. Then, the operator at the traffic centre calls all the approaching trains to tell them to stop immediately without any additional information. This is a "blind" way of managing LC incidents. According to Griffon, human errors cause 99% of accidents at the LCs, 93% of which are caused by road users. For this purpose, road and railway safety professionals from several countries have been focused on providing an LC that is as safe as possible. Actions are planned to exchange information and provide experiments for improving the management of LC safety and performance.

I. Introduction:

Accidents are defined as unplanned occurrences which results in injuries, fatalities, loss of production or damage to property and assets. Preventing accidents is extremely difficult in the absence of an understanding the cause of accidents. Road accidents are undoubtedly the most frequent and, overall, the cause of the most damage. The reason for this are the extremely dense road traffic and the relatively great freedom of movement given to drivers. Accidents involving heavy goods vehicles occur all too frequently despite calls for responsible behaviour, for respect of the loading regulations and the highway code, as well as the obligation for drivers to adapt their speed, which affects stopping distances to the traffic and weather conditions. Basically signal based system is practised by the pedestrian in the level crossings to cross the road. Due to the carelessness of the people most of the accidents occurs day to day. According to Griffon, human errors cause 99% of accidents at the LCs, 93% of which are caused by road users. Hence the prevention of road accidents is extremely important. So work-related to traffic accidents can be prevented through technical measures. Thus to avoid accidents embedded based systems are used in the vehicles for the detection of person crossing the road and the automatic control of the vehicle to avoid accidents. The main components used in embedded based systems are ultrasonic sensor, DC motor, RF transmitter, RF receiver, MATLAB, buzzer which are embedded in arduino UNO microcontroller. These embedded unit plays a vital road to avoid accidents in the level crossings.

II. Related Work:

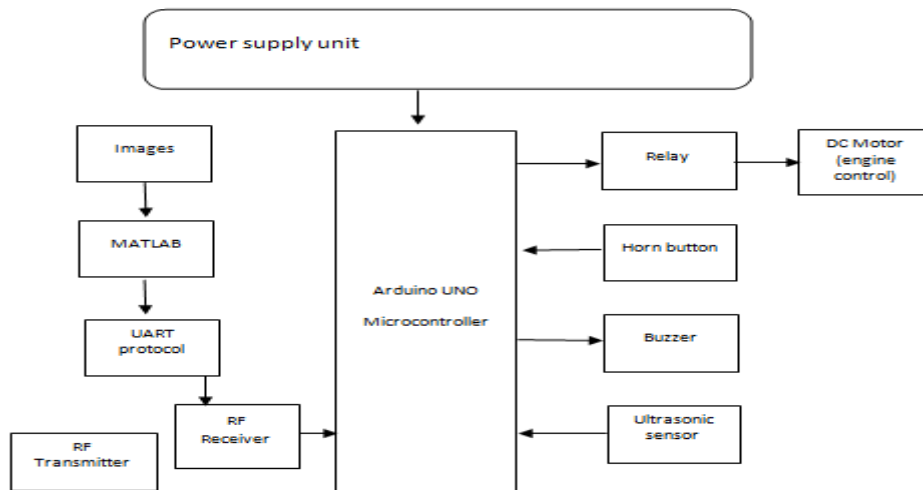
In existing signal based method is used. The signal based system is that by using thered, yellow and green signal in the traffic light pole the pedestrian want to cross the zebra level. By this method lot of accidents will occur and people usually will cross while it's in red signal also this will also lead to accident. In restricted area also they play horn like hospitals, schools. It will create too much disturbance to elder people and children. In high traffic zone pedestrian won't wait for signal they just cross the road without any indication this may lead to accident. The main disadvantages are due to carelessness lot of accidents will occurred in this method. This type of manual method will lead to accident.

III. Proposed Approach:

In proposed we prefer embedded based image processing method to avoid accident during pedestrian crossings in road. In this we used MATLAB image processing to predict whether person is available in the zebra crossings or not. If the person crossing the zebra level our vehicle speed automatically gets reduced and buzzer

alarm provided for the driver to alert them. In addition to that ultrasonic sensor is interfaced with arduino controller to predict the pedestrian. If the ultrasonic sensor detect the person at the same time vision method also detect the person means our vehicle will stopped automatically with indication. With reference to RF we are going to predict the no horn zone which will avoid playing horn in that location. The main advantage of this embedded based design is the automated one in which more number of accidents is reduced in zebra level crossings and normal road crossings. By this method everyone will obey the traffic rules and this method will does not cause any disturbances to the people in the no-horn regions.

IV. Block Diagram:



V. System Implementation:

The project is based on the embedded system to avoid accidents in level crossings. The embedded components and its uses are as follows: **ULTRASONIC SENSOR⁰¹** is used to detect the object in the level crossings at a certain distance and decreases the speed of the vehicle automatically. **MATLAB image processing⁰²** detects the person in the level crossings and indicate the driver by automatically reducing the speed of the vehicle. When both ^{01, 02} functions simultaneously the vehicle stops automatically. The **RF Transmitter and RF receiver** detects the no-horn zone and avoids the driver to play horn in that region. **DC motor** is used to control the speed of the vehicle. These components are embedded in the **ARUDINO UNO MICROCONTROLLER**. Hence by this method accidents are avoided.

RESULT:



Fig1: hardware implementation

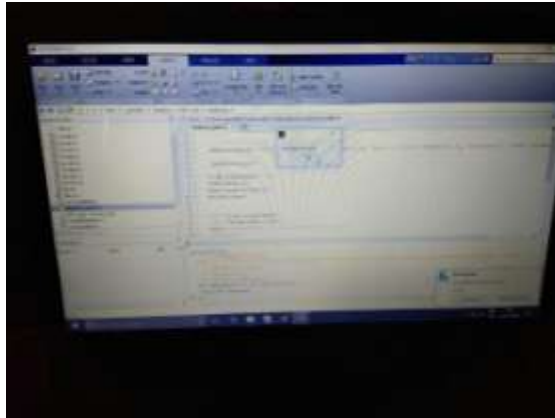


Fig2: software implementation

VI. Conclusion:

A. In this project, the embedded based system is used in which the **accidents are avoided** automatically by using the MATLAB programming.

B. By this method, people obey the traffic rules and by the automatic system more accidents are avoided and many lives are protected.

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