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Pedecross Alert System Using IOT

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ABSTRACT: Pedestrians are the most vulnerable road users, with around 23% of world road traffic fatalities. To prevent such traffic collisions, the Pedecross alert system the driver before an imminent collision. In order to protect worldwide pedestrians, the Pedecross alert system should take into account different pedestrian crossing behaviours and different road structures, especially pedestrians with risky behaviour on unstructured environments. Sudden pedestrian crossing is the major cause of accident on the road, especially in cities. Since oblique crossing is the usual crossing way of pedestrians with risky behaviours, recognizing the pedestrian walking direction is one of the key factors to consider. Sudden pedestrian crossing is the major cause of accident on the road, especially in cities. Some of them just take it easy. Most of the results show that drivers tend to lose their attention and always feel drowsy while driving. When there were several factors that made roads unsafe, researchers pointed out that careless zebra crossing before the red signal is on for the vehicles, mainly motorists riding on pavement to beat traffic were on the top of the reasons. But the major/top cause for accidents at pedestrian crossings was vehicle speeding or jumping signal without giving right of way to pedestrians. With analysis of total deaths during the month of November 2020 is 876 by Tamil Nadu government's Transport ministry. Almost 40-60% of road cases are pedestrian deaths only. Therefore, the main objective of this project is to build an alert system for pedestrian that can detect sudden crossing the road using ARDUINO microcontroller.

KEYWORDS: Emergency Vehicle, IOT, Zigbee.

I. INTRODUCTION

Walking, as an important transportation mode, plays a large part in urban transportation systems. This mode is of great importance for planners and decision-makers because of its impact on environmental and health aspects of communities.

However, this mode is so complex in nature that makes it difficult to study or model. On the other hand, chaos theory studies complex dynamical nonlinear systems that are sensitive to their initial conditions. A small change in initial conditions and/or parameters, may cause a big variation in the results. That is the situation that could happen in many fields of transportation.

In order to protect worldwide pedestrians, the Pedecross alert system should take into account different pedestrian crossing behaviours and different road structures, especially pedestrians with risky behaviour on unstructured environments. Sudden pedestrian crossing is the major cause of accident on the road, especially in cities. Most of the results show that drivers tend to lose their attention and always feel drowsy while driving.

In the current study, the pedestrian behaviour in crosswalks was studied in terms of chaos theory. The well-known social force model was chosen to model pedestrian movement in crosswalks, and based on the model, sensitivity analysis with respect to its parameters was carried out. Pedestrian road crossing behaviour based on Helbing social force model was simulated in MATLAB codes. Then pedestrian crossing behaviour was investigated to detect the chaotic behaviour.

The main objective of this project is to build an alert system for pedestrian that can detect sudden crossing the road using ARDUINO microcontroller.

II. LITERATURE SURVEY

In 2018 Akash Jain, Ankit Gupta, Rajat Rastogi worked on "Pedestrian crossing behaviour analysis at intersections". Pedestrian crossing behaviour is analysed for the provision of proper pedestrian facilities at desired locations, as well as to improve their safety while crossing the road. This paper presents the analysis of pedestrian crossing behaviour from a study conducted at Roorkee city (Uttarakhand state in India). To deliver messages to warn populations at risk of imminent threats with the goal of maximizing the probability that people take protective actions and minimizing their delay in taking those actions.

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In 2018 Giovanni Pau, TizianaCampisi, Antonino Canale , Alessandro Severino, Mario Collotta and Giovanni Tesoriere worked on"Smart Pedestrian Crossing Management at Traffic Light Junctions through a Fuzzy-Based Approach". In the last few years, numerous research efforts have been conducted to merge the Internet of Things (IoT) with smart city environments. The goal to make a city "smart" is arising as a possible solution to lessen the issues caused by the urban population growth and fast urbanization. Attention also has focused on the pedestrian crossings because they are one of the most dangerous places in the transport field. Information and Communications Technologies (ICT) can undoubtedly be an excellent support in developing infrastructure.

In 2020 MounaJiber ,AbdelilahMbarek , Ali Yahyaouy , My Abdelouahed Sabri and JaouadBoumhidi worked on "Road Traffic Prediction Model Using Extreme Learning Machine: The Case Study of Tangier, Morocco".
An efficient and credible approach to road traffic management and prediction is a crucial aspect in the Intelligent Transportation Systems (ITS). It can strongly influence the development of road structures and projects. It is also essential for route planning and traffic regulations. In this paper, we propose a hybrid model that combines extreme learning machine (ELM) and ensemble based techniques to predict the future hourly traffic of a road section in Tangier, a city in the north of Morocco. The model was applied to a real-world historical data set extracted from fixed sensors over a 5-years period

In 2021 SafaaDafrallah 1,2, Aouatif Amine1 , Stéphane Mousset And Abdelaziz Bensrhair worked on"Monocular pedestrian orientation recognition based on capsule network for a novel collision warning system". Pedestrians are the most vulnerable road users, with around 23% of world road traffic fatalities. To prevent such traffic collisions, the Pedestrian Collision Warning System (PCWS) alerts the driver before an imminent collision. In order to protect worldwide pedestrians, the PCWS should take into account different pedestrian crossing behaviors and different road structures, especially pedestrians with risky behavior on unstructured environments. Since oblique crossing is the usual crossing way of pedestrians with risky behaviors, recognizing the pedestrian walking direction is one of the key factors to consider.

III. PROPOSED SYSTEM

The purpose of this thesis was to determine which perceptual cues drivers use to identify pedestrians that may constitute a risk in traffic. Results include that driver not only react to pedestrians they believe will behave in a dangerous way, but also react to pedestrians that probably not will behave in such a way, but where the possibility still exists. The study concluded that it was not possible to determine how risky a pedestrian is considered to be by only using behavioural factors such as trajectory or position on the sidewalk, and distance. It is necessary also to include environmental factors, mainly where the pedestrian and car are positioned in relation to the side of the road, so that the behaviour of the pedestrian can be interpreted. To some time in the future develop a system that can warn drivers about pedestrians, one first needs to establish which pedestrians actually are worth keeping an eye on, and which are not. Just determining the shape, a pedestrian is something to be done by algorithms. To determine which pedestrian is at risk to be hit by the car on the other hand, one needs a system that can discriminate among pedestrians to find the ones that might act in a way that could put them at risk of being hit. The objective of this study was to relate the pedestrian behaviors to what behavior a driver actually feelsis "risky", something that needs to be focused more upon. This study aimed to find the cuesassociated with drivers believing that a certain pedestrian might behave in a wayat could cause them to be hit by the driver. These cues will later on be the first findings to
be used as a starting point for an intelligent night vision system

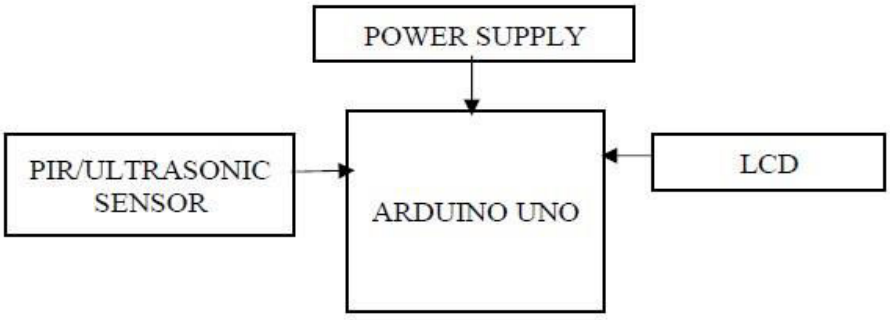

FIG 1: BLOCK DIAGRAM OF MATLAB IMAGE PROCESSING AND IMAGE DATASET

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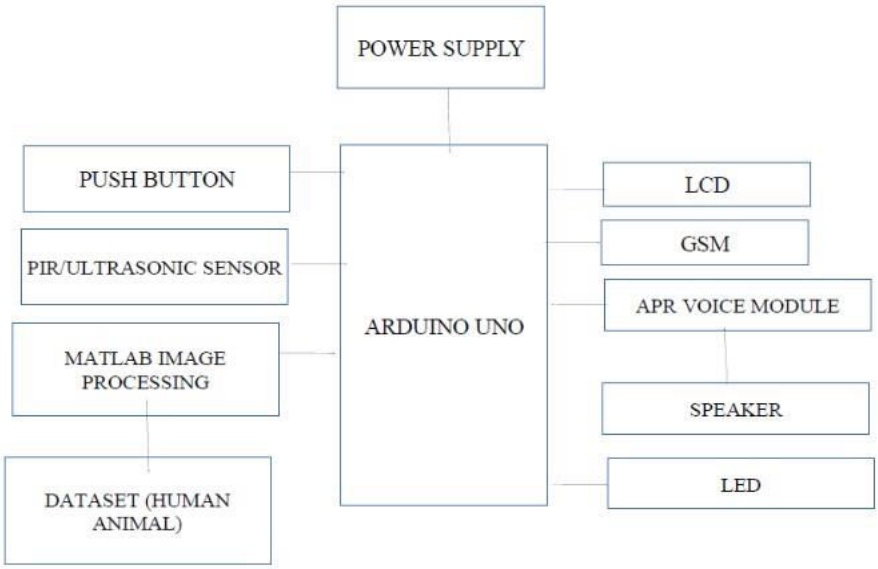
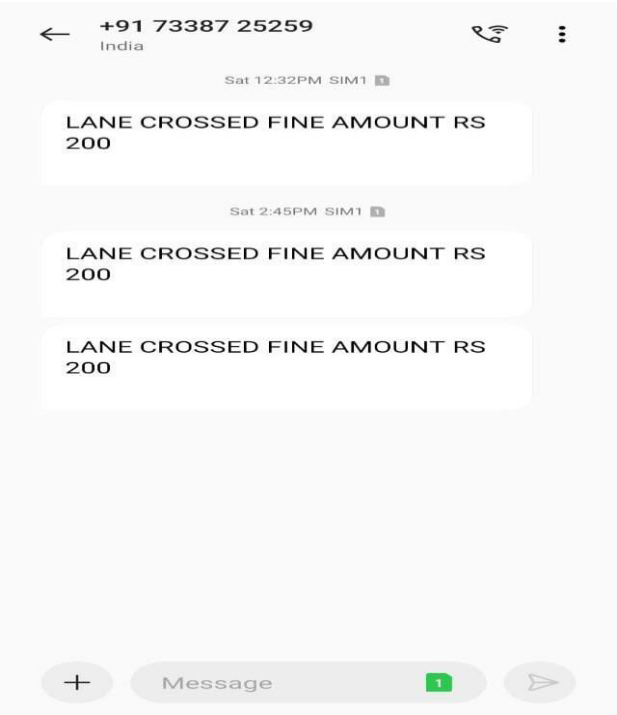


FIG 2: BLOCK DIAGRAM OF PROPOSED SYSTEM

Arduino UNO microcontroller id used to interface between MATLAB Image Processing and communication device. In MATLAB image processing technique is well trained and tested. LCD is used to display tested values. Text to Voice conversion is done by using Bluetooth module.

Arduino IDE (Integrated Development Environment) is the software for Arduino. It is a text editor like a notepad with different features. It is used for writing code, compiling the code to check if any errors are there and uploading the code to the Arduino.

IV. RESULT ANALYSIS



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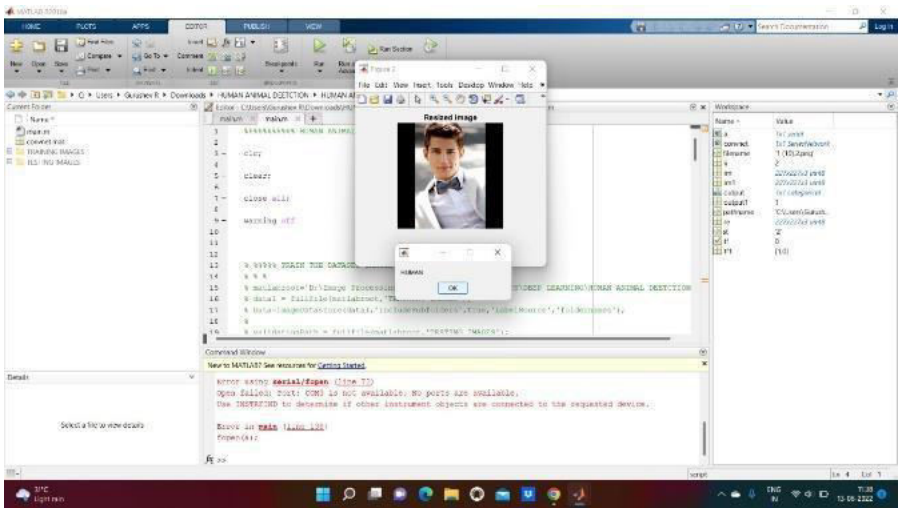

V. CONCLUSION

In this project, we have implemented an alert system for pedestrians using Arduino and MATLAB. Even if these results are not possible to generalise in their detailed state, some more general conclusions can be drawn. It was not possible to determine if a pedestrian will be considered a risk based merely on the pedestrian's behaviour and distance to the car. It however became possible to a large extent to do so by also interpreting the behaviour of the pedestrians.
Therefore, it is necessary to track and interpret the behaviour of the pedestrian. Information processing alone is not sufficient to develop a system to discover risky pedestrians; the system also needs to have an understanding of the driver's perception during driving and the Even if these results are not possible to generalise in their detailed state, some more general conclusions can be drawn. It was not possible to determine if a pedestrian will be considered a risk based merely on the pedestrian's behaviour and distance to the car. It however became possible to a large extent to do so by also interpreting the behaviour of the pedestrians. Therefore, it is necessary to track and interpret the behaviour of the pedestrian. Information processing alone is not sufficient to develop a system to discover risky pedestrians; the system also needs to have an understanding of the driver's perception during driving and the active and anticipatory nature of that perception. It is also vital to note that not only the pedestrians who behave in a way that could put them at risk are considered as risks, but also the pedestrians who could, but probably will not, behave in an unsafe way. Active and anticipatory nature of that perception. It is also vital to note that not only the pedestrians who behave in a way that could put them at risk are considered as risks, but also the pedestrians who could, but probably will not, behave in an unsafe way.

REFERENCES

[1] Zhu, Q.-Y.; Qin, A.; Suganthan, P.; Huang, G.-B. Evolutionary extreme learning machine. Pattern Recognit. 2005,
[2] Y. Xu, D. Xu, S. Lin, T. X. Han, X. Cao, and X. Li, "Detection of sudden pedestrian crossings for driving assistance systems," IEEE Trans.
Syst. Man, Cybern. Part B Cybern., vol. 42, no. 3, pp. 729–739, 2012.
[3] R. Schram, A. Williams, and M. van Ratingen, "Implementation of autonomous emergency braking (AEB), the next step in euro NCAP' s safety assessment," 23rd Int. Tech. Conf. Enhance. Saf. Veh., pp. 1–6, 2013
[4] M. Jeong, B. C. Ko, and J. Y. Nam, "Early Detection of Sudden Pedestrian Crossing for Safe Driving during Summer Nights," IEEE Trans. Circuits Syst. Video Technol., vol. 27, no. 6, pp. 1368–1380, 2017.
[5] R. V Shinde and S. D. Lokhande, "Detection of Pedestrian Crossing for Safe," pp. 6936–6946, 2017.
[6] S. A. S SADIA BANO, "Forecasting Of Sudden Pedestrian Crossing For Safe Driving During Nights By High Intensity Night Vision Camera," Int. J. Innov. Technol. Res., no. 5, pp. 7247–7251, 2017.
[7] A. Baruah & A.B. Kandali, "Pedestrian Detection Based on OpenCV and TensorFlow", International Journal of Research and Analytical Reviews, Vol.5 No.2., pp 1218-1221, 2018 8.
[8] Zeynoddin, M.; Bonakdari, H.; Azari, A.; Ebtehaj, I.; Gharabaghi, B.; Madavar, H.R. Novel hybrid linear stochastic with non-linear extreme learning machine methods for forecasting monthly rainfall a tropical climate. J. Environ. Manag. 2018

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[9] D. O. Pop, A. Rogozan, C. Chatelain, F. Nashashibi, and A. Bensrhair, ''Multi-task deep learning for pedestrian detection, action recognition and time to cross prediction,'' IEEE Access, vol. 7, pp. 149318–149327, 2019.
[10] Zadobrischi, E. and M. Negru. Pedestrian detection based on TensorFlow YOLOv3 embedded in a portable system adaptable to vehicles. in 2020 International Conference on Development and Application Systems (DAS).

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