iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** X **Month of publication:** October 2023

DOI: https://doi.org/10.22214/ijraset.2023.56148

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue X Oct 2023- Available at www.ijraset.com

Study and Analysis of Smartly Reduce Accident Rate for Pedestrian

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Abstract: ***In an urban area mostly at the intersection of the road we observe more accident take place and mainly involve pedestrian due to heavy traffic congestion, cannot follow traffic rules properly, rash driving and skip traffic signal and by the mistake of pedestrian . Hence, we try to overcome all these problems by applying one new technology "smartly reduced accident rate for pedestrian" it is work when red light is flashes barrier is open and do motor start zebra crossing turn to smart zebra crossing as an elevator & when green light is flashes DC motor turn off & barrier are close & open for vehicles***
Keyword: Barrier control, smart zebra crossing, pedestrian safety, accident prevention.

I. INTRODUCTION

Now a day road transportation is most important part of the country. Development of any country decided due to three road transportation facility. Because transportation of any material or survive people one place to another. Hence their uses increase congestion of traffic & accident rate also. Many of the time accident take place at intersection of road & in that place mainly involve pedestrians. This accident due to fast moving vehicle like two-wheeler, car, bus, tractor, etc. According to 2021 NCRB 1.5 lakh peoples died in road accident and count of pedestrians are 60000 is injured and 29200 will be died this accident take place at intersection of the road due to mistake of pedestrians or fast-moving vehicles or length of lane. These accident rate increase day by day. Hence this all problem we introduce one new technique "smartly reduce accident rate for pedestrian'' in this technique we try to overcome accident rate of pedestrians in place of intersection of the road and also release traffic congestion smartly.

II. OBJECTIVES

1) *Enhance Pedestrian Safety:* Create a secure pedestrian passage by physically separating pedestrian from vehicular traffic using barriers. This prevents pedestrians from inadvertently stepping into the path of moving vehicles.
2) *Reduce Accidents:* Decrease the occurrence of accidents involving pedestrians and vehicles at crossing points by minimizing the opportunity for conflicts between pedestrians and vehicles.
3) *Improve Accessibility:* Ensure that pedestrian, including those with mobility challenge, have equitable access to road crossings by utilizing the elevator system.

III. LITERATURE REVIEW

1) (In 2019): - Inupiatun Amal putter Ahmad & Rustic Abdullah published his paper in a year of 2019 this study aimed to improve zebra crossing by implementing smart technology with motion sensors and LED lights, enhancing safety and user-friendliness, resulting in 100% user satisfaction and reduced accidents at key locations.
2) (In 2020): - S.J. Sujit Prasad, P Yuga Anth, R Kumaravelan, R Suresh Kumar, V Aravindan, VA Harish, S Janani and S D kaiseki published his paper in a year 2020 this paper seeks to address the safety concerns faced by pedestrian in urban areas where heavy road traffic poses risks at road crossing. The objective is to reduce accidents at pedestrian crossing near traffic signals. These accidents often result from drivers behaving unethically by disregarding traffic signals. The proposed solution involves the implementation of automatic barriers at zebra crossing. These barriers will automatically rise when pedestrians need to cross and lower during vehicle traffic. Additionally, the system includes camera monitoring to identify and deter individuals who violate traffic signals.
3) (In 2022): - Ms.N. Vijayalakshmi MSc, M Phil, M. Rajalakshmi published his paper in a year 2022 this article discusses a futuristic approach to pedestrian safety at traffic signals, using automatic barricades, warning system, and airbags. It claims a 90 % reduction in pedestrian fatalities. Additionally, it mentions an emergency braking system with a 35 – degree field of view for detecting pedestrians at signalized junctions.

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IV. METHODOLOGY

The methodology adopted smartly reduce accident rate for pedestrian safety atintersection of the road.

Tree diagram for pedestrian safety adopted at intersection consist Raspberry Pi- 3Bt it includes power supply, traffic signals, vibration sensor, solenoid valve & web cam & DC motor used to convert Zebra crossing into smart Zebra crossing (means zebra crossingact as elevator) & pedestrian cross the road safety & raspberry pi-3Bt work when red light flashes then barrier open across the road of zebra crossing in that time any vehicles hit their barrier plats web camera capture number plate of their particular vehicles & when green light flashes elevator stop & barrier down automatically.

A. Component Used

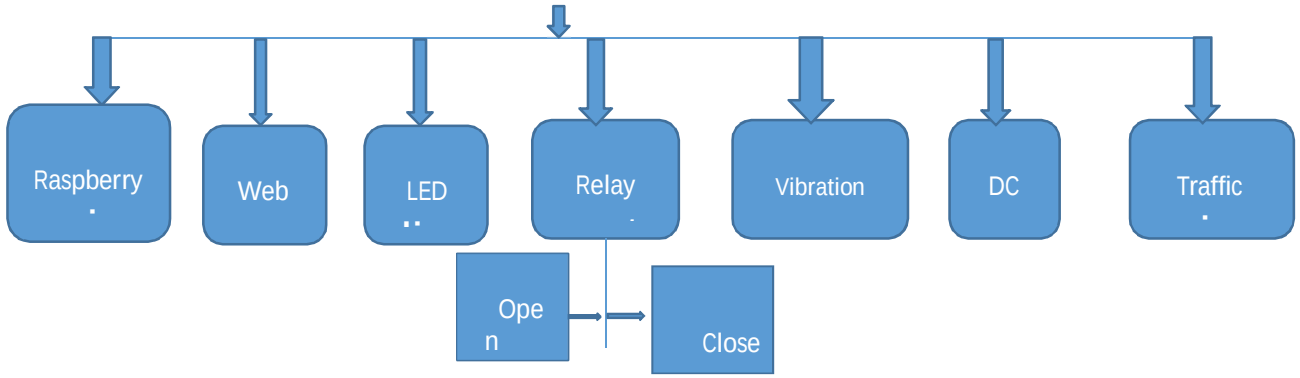


Fig: - tree diagram for pedestrian safety & emergency vehicular.

B. Material Used

IN this system some hardware components used is as follow:

1) DC (Dual shaft) Motor

Dual shaft geared motor are useful in robotic applications the user gets enough headroom for the orientation of the motor & can be used in any orientation as per theapplied in its required. In this system DC dual shaft motor are zebra crossing convert into smart zebra crossing (means it acts as elevator) to cross the road automaticallywithout effort.



2) WEBCAM

A webcam is a video camera which is designed to record or stream to a computer or computer network. They are primarily used in video telephony, live steaming & socialmedia and security. & It is used at intersection of the road is capture the number plateof a particular vehicle when it hits the barrier

3) Rasberry PI -3 B+

It became a popular and easy to experiment tool to develop school project hardware programming, robotics, bearing automated machine, circuit, etc. The uses of raspberryPi are a small quite an affordable and very much capable hardware device called a circuit size computer. It can used in his system as control to power supply vibration sensor, webcam, traffic signal, solenoids valve (phonematic piston) & DC motor when red lightis flashes.

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4) Relay

Relay are normally used in the control panels, manufacturing & building automation to control the power along with slithering the small current values in a control circuit in their system relay controller control the steel barrier open or close whenred light flasher or green light flasher

5) LED Light

The efficiency & direction nature of LED's makes the ideal for many industrial users. Itcan used in this system only night time to visible barrier & zebra crossing.

V. RESULTS AND DISCUSSIONS

In the system of "SMARTLY REDUCED ACCIDENT RATE FOR PEDESTRIAN" various types of materials used which is useful for reduce accident rate & traffic reduce systematicallywhich is better from conventional zebra crossing.

In traffic signal contain traffic light which is used to control & direction of vehicles movement at the intersection of the road. Traffic light consist three colored such as red, yellow & green i.e., red colored indicates stop the vehicle & pedestrian go upto30 sec, yellow light indicates clearance upto15 sec & green light indicate vehicle 90upto 25sec.

In conventional zebra crossing traffic rules cannot follow properly due to the various problems such as heavy traffic conjunction, rash driving of vehicles/ cars, break failure,visibility of marking of zebra crossing at right etc. and hence accident are take place.

But in this system, we try to reduce accident rate & riles follow properly.

A. Smart Zebra Crossing

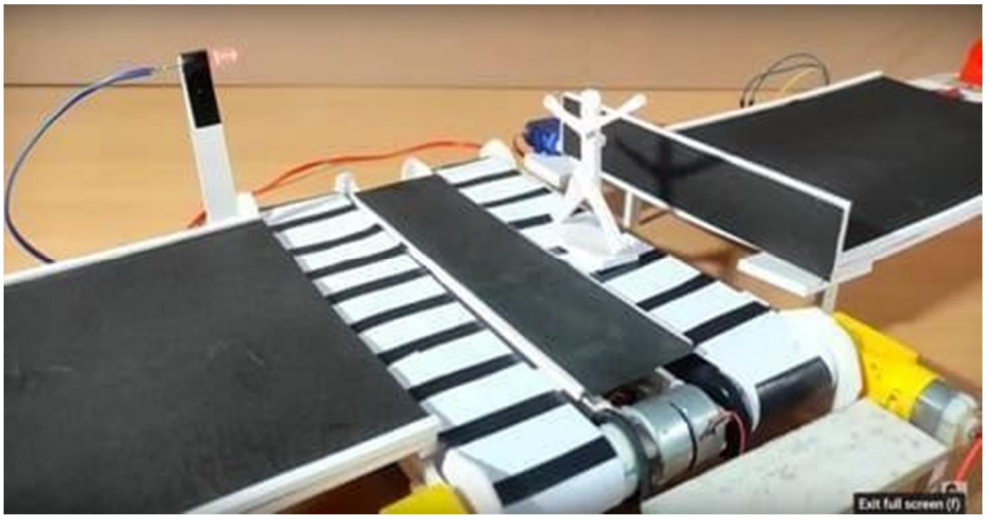
1) When red light is flashes barriers isopen, vehicles stop & pedestrian cross the road safety.
2) DC motor acts as an elevator & cross the road safety & fastly.
3) LED is used as good night visibility.
4) This zebra crossing reduces accidentsrate as compared to conventional zebra crossing.
5) It is safe the time & follow rulesproperly.

B. Conventional Zebra Crossing

1) Pedestrian cannot cross the road safety & fear lastly as compared to smart zebra-crossing.
2) IT cannot cross the road fastly .
3) Less good visibility at night.
4) More accident rate as compared to smart zebra crossing.
5) It is more time consume for crossthe road & rules can be follow property.

VI. SEQUENCES OF OPERATIONS

SR. NO.	NORTH	SOUTH	EAST	WEST	COLORED CODE
XIV. 1	XV. G	XVI. R	XVII. R	VIII. R	XIX.
XX. 2	XXI. Y	XII. R	XIII. Y	XIV. R	XV. RED
XVI. 3	XVII. R	VIII. R	XIX. G	XX. R	I. YELLOW
XII. 4	XIII. R	XIV. Y	XV. Y	XVI. R	II. GREEN
VIII. 5	XIX. R	XL. G	XLI. R	XLII. R	XLIII.
LIV. 6	XLV. R	LVI. Y	LVII. R	VIII. Y	XLIX.
L. 7	LI. R	LII. R	LIII. R	LIV. G	LV.
LVI. 8	LVII. Y	VIII. R	LIX. R	LX. Y	LXI.



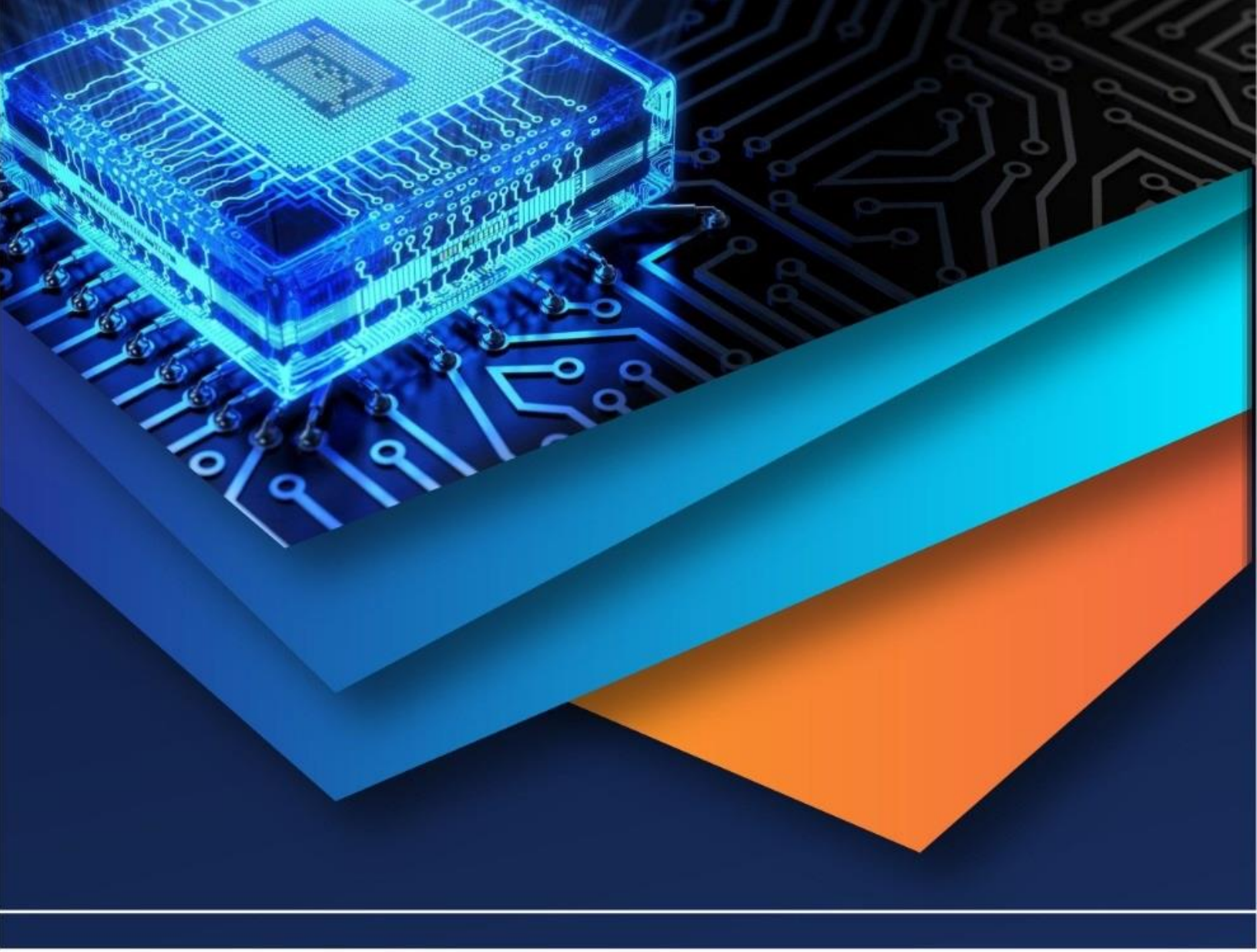
VII. CONCLUTIONS

In system of "SMARTLY REDUCED ACCIDENT RATE FOR PEDESTRIAN" This system very useful for reduce accident rate & pedestrian cross the road safely and fastly . But first pedestrians face many of the problems such as fast-moving vehicles skip the signal not importance of tallow light, breakfailure etc. after use this system try to overcome all these problems. His work when red light is flashes barriers open and DC motor start and closebarrier & open for vehicles.

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10.22214/IJRASET

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