

Controlling Suicides in Indian Metro Railway by Implementing a Laser Driven Automatic Mechanical Prey Catching System

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ABSTRACT

The objective of this paper is to propose an analog circuit based design to control suicides in Indian metro railways. The proposed design is cheap, flexible and reliable. A laser beam is used to detect people jumping on the track which is connected to a light dependent resistor to send signal to control room of the station and the train arriving on that platform. Simple encoded transmitter and receiver are used to design the system. The design not only deals with stopping the train in such cases but also catching the people on an automatic driven mechanical tray.

Keywords- LDR, autonomous sensor, mechanical tray, suicide control, metro railway, prey catching

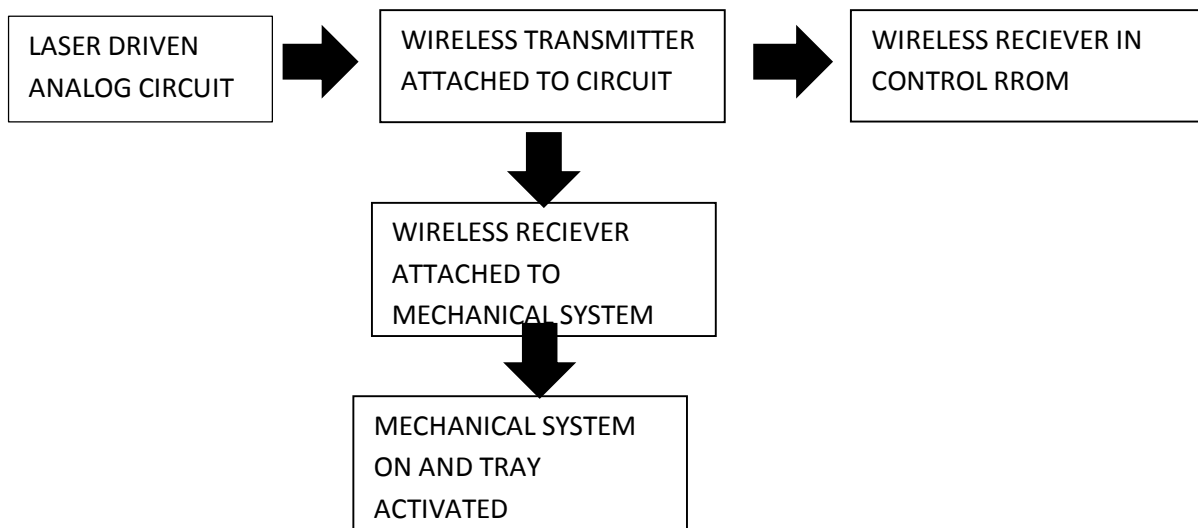
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INTRODUCTION

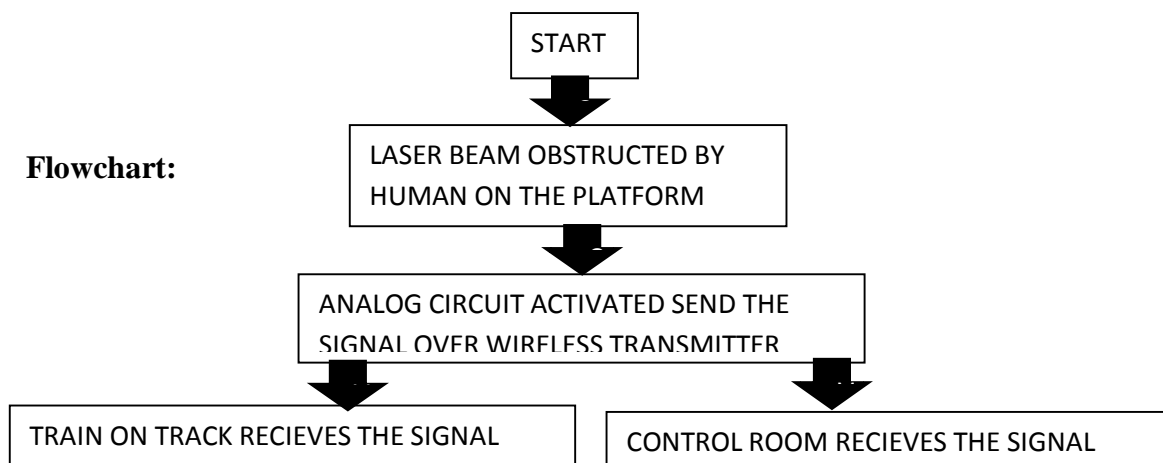
Metro Railway has become the best place for people to attempt suicide. At present the death toll counts 108 in Kolkata metro railway. Due to this abnormal mental activity of humans, metro railway services gets disrupted for many hours which makes the passenger suffer from loss of time and money. A lot of measures have been taken till now to control such accidents but none was found to be efficient enough because all the theories proposed till now deals with controlling the speed of train and power off the tracks.

A new method is implemented in this design, in which a laser beam of low intensity which will not be harmful to any human will run parallel over the edge of the platform if a citizen tries to jump on the track, laser will face obstruction and send a signal to control room as well as to the train incoming on the track. On receiving the signal the control room will switch off the power of tracks and the train on receiving the signal will automatically drive a mechanical tray to catch the person jumping on the track. This design deals with not just controlling but also saving the people attempting suicides.

BLOCK DIAGRAM:



Flowchart:



PRINCIPLE OF OPERATION:

A laser beam when gets obstructed by any citizen, the light falling on the LDR (light dependent resistor) gets obstructed which activates the circuit and a 3.5mA current flows through the led (light emitting diode) which is encoded by an encoder HT12E and transmitted by the A434Tx transmitter. All circuits are operated on 12V dc supply.

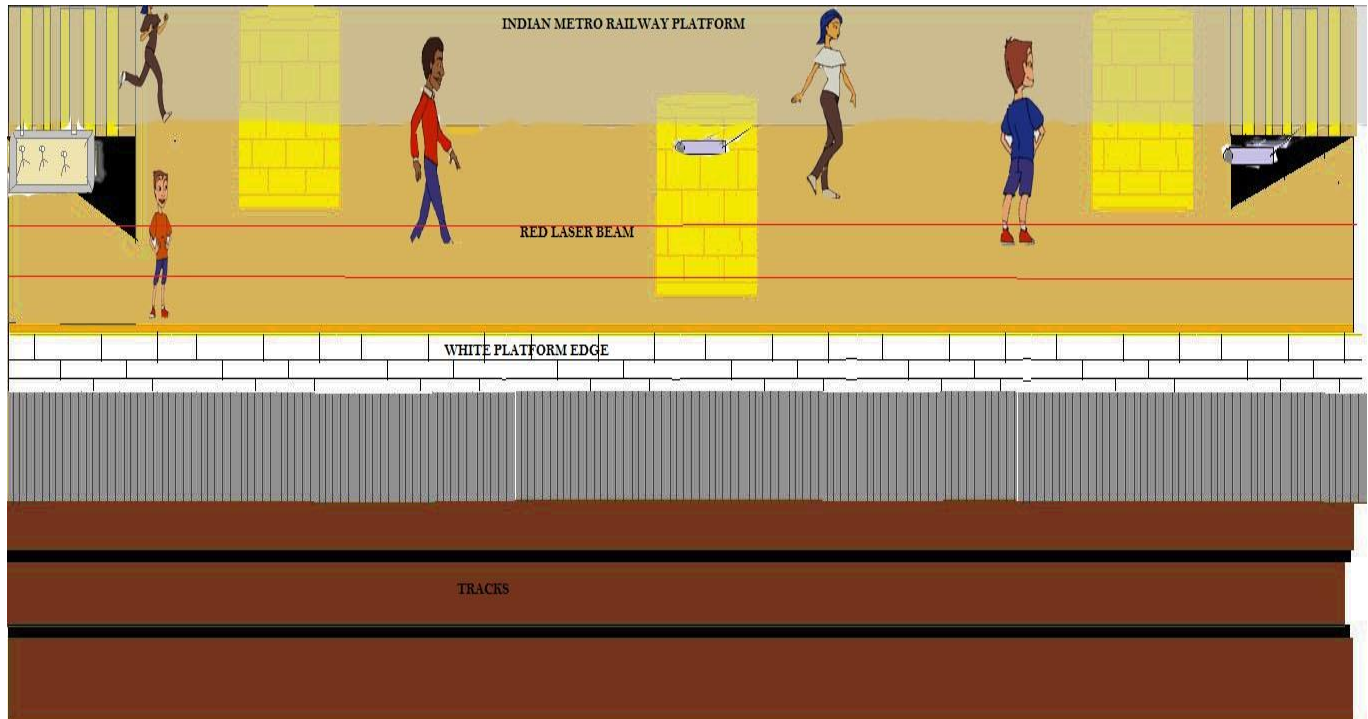
The signal transmitted is of 455 MHZ and is intercepted by the receiver A434Rx and decoded by HT12D decoder at the control room and the train on the platform.

Transmitter can also be attached to smart antenna for better performance.

On receiving signal the control room switches off the power of the tracks and on receiving the signal in train a dc motor is driven in the clockwise direction to which a mechanical tray is fitted such that it can slide over it, on motion of the dc motor the tray comes out and person jumping in front of train falls on the tray and is saved from performing suicide.

The design is basically divided in three parts transmitting part, receiving part and the mechanical tray design.

The setup of the design in a platform looks to citizen like



CONCLUSION:

The design is reliable, flexible and cheap and can be helpful to save people from attempting suicides in metro railways. The future research on this design can be done on the areas on wireless mechanism for

better security of data transmission during the case of obstruction of laser beam. The design is made from humanitarian technology aspect of view.

References:

- 1) Mukti Advani and Gautam Tiwari "Evaluation of public transport system: case study of delhi metro Transportation" Research & Injury Prevention Programme Indian Institute of Technology, Delhi, India
- 2) A text book of analog devices and circuits by J.B gupta 8th edition
- 3) A text book of digital electronics by Anand kumar 8th edition
- 4) Song w.T. and scheimiser B.W."Omitting meaningless digits: analysing LDR simulation" conference (WSC),147-152
- 5) somalraju.S,Murali.V,saha.G, "Robust railway track detection scheme using led-ldr "assembly recent trends in information technology (ICRTIT) 2012 international conference
- 6) Singh, Y. P. (2002). "Performance of the Kolkata Metro Railway: A case study". CODATU XI Pa., 337-342.