RESEARCH ARTICLE   OPEN ACCESS

Railway Track Crossing For Handicap

Kinjal Patel, Hetali Rupani, Priyanka Shah
Guide: Mrs Sharmila Barve
Department Of Electronics and Telecommunications
Thadomal Shahani Engineering College
Bandra, Mumbai - India

ABSTRACT
The current railway systems in India are not automated and are fully man-made. In railway stations generally we use bridges. It is very difficult for the elderly persons or handicapped persons to use the bridge. This project finds a good solution. Mainly the motion of a train is checked by sensor, this is used for automatically close/open the mobile platform. We made this device with the help of IR Sensors and Microcontroller. This project is used for automatically close/open the mobile platforms in between the train tracks. Normally the two platforms are connected by the mobile platform, through which the passengers can walk on the platform to reach the next platform when the train comes. Sensors are placed on the two sides of the track. If the train reaches one sensor, the mobile platform will automatically close which allows the train to go through the tracks and then when the train leaves the second sensor the mobile platform will automatically open bridging the 2 platforms. The microcontroller will check the presence of train by using infrared sensors. So on sensing the train on one path controller will give signals to the stepper motor to close the mobile platform automatically

Keywords:- DC, LED, IR

I.   INTRODUCTION

The current railway systems in India are not automated which are fully man made. In railway stations normally we use bridges. It is very difficult for the handicapped persons or elderly persons using the bridge.
Mainly the motion of a train is checked by sensor,
this is used for automatically close/open the mobile platform. Sensors are placed on both sides of track to sense the motion of the train. The microcontroller will sense the presence of trains by using infrared sensors. So by sensing the train on one path, the controller will give pulses to the stepper motor to close the mobile platform automatically.

II.   PROPOSED SYSTEM

This experiment is used to automatically close or open the mobile platform. It saves the time for passengers to cross the platform. Thus the sensing is made continuously whenever the train arrives and pass through. This the tracking of train is sensed continuously, which automatically open or close the mobile platform is partially automated which is beneficial for passengers to cross the rail grade

crossing. The system is designed as a fully automated instead of climbing the staircase. This efficient method will be more compact for scheduling the timings of train for reaching the particular destination and also for crossing the suitable platforms.


Block diagram
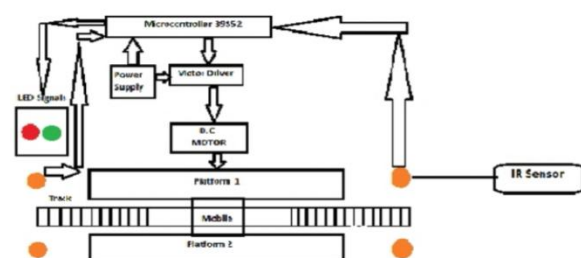
III. DESIGN

- Whenever the train arrives the transmitter sensor gets disturbed due to interruption of the train.
- Thus the micro-controller senses the arriving of the train.
- Before making the platform move backward the micro-controller gives siren to alert the people who   are on the platform.

- After a certain time the controller moves the platform by rotating the DC motor in clockwise direction.
- For making the bridge move forward the controller should know whether the train has left or not.
- For this the second sensor pair is used. Whenever the second sensor senses the train. I.e. when the transmitter is disturbed then the controller waits for the last compartment to leave.
- Then the controller output is given to the DC motor, which makes the DC motor move in anticlockwise direction, making the temporary bridge move forward thereby making a way for the pedestrians to move.

A. MICROCONTROLLER

The AT89C51 is a low-power and high performance CMOS 8-bit micro-computer with 4Kbytes of Flash programmable, erasable(PEROM) read only memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is in accordance with the industry-standard MCS-51 instruction set and pin out. The on-chip Flash permits the program memory to be reprogrammed in the system or by a conventional nonvolatile memory programmer. By combining a multifaceted 8-bit CPU with the Flash on a monolithic chip, the Atmel AT89C52 is a powerful microcomputer which provides a highly malleable and cost effective solution to many embedded control applications.
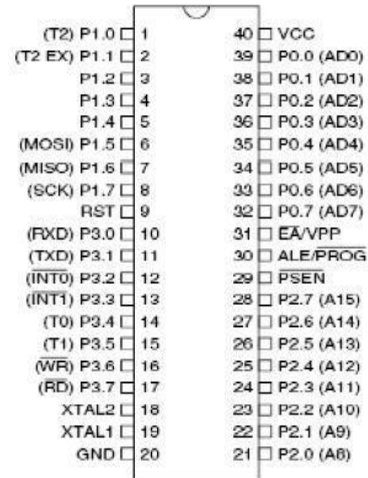
B. IR SENSOR

An infrared sensor is an electronic device that release and detects infrared radiation in order to sense some aspect of its surrounding. It can determine the heat of an object, as well as detect motion. In a typical infrared sensor like a motion detector radiation enters the front of the sensor itself at the center of the device.


Ir sensors
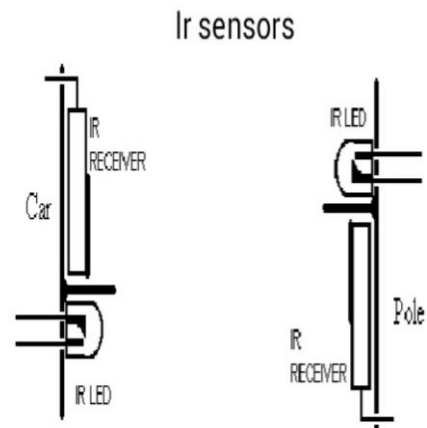
C. DC MOTOR

DC motor works over a fair span of voltage .The higher the input voltage more is the RPM of the motor. If the motor works, in the span of 6-12V, it will have the least RPM at 6V and maximum at 12V. RPM=K1*V, where, K1=induced voltage constant V = voltage applied .

D. MOTOR DRIVER

The L293 and L293D are quadruple high current and half H drivers. The L293 is designed to provide bidirectional drive currents of up to 1 A at voltages ranges from 4.5 V to 36 V. The L293D is designed to provide bidirectional drive currents of up to 600-mA at voltages ranges from 4.5 V to 36 V. Both devices are designed to drive inductive loads such as solenoids, relays, DC and bipolar stepping motors, as well as other high-current / high-voltage loads in positive supply

applications.
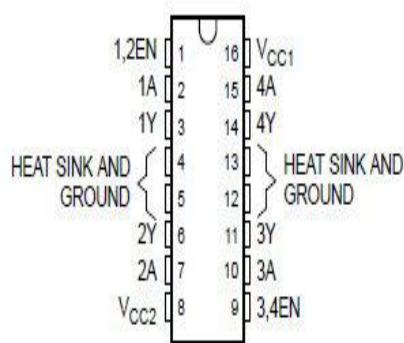
E. LEDs

LED's are used as indicator lamps in many devices and are increasingly used for lighting .When a light emitting diode is switched on ,electrons are able to recombine with holes within the device ,releasing energy in the form of photons.

IV. ADVANTAGES

- An alternative to the conventional crossing for physically challenged and elderly.
- Can be used for transferring heavy loads from one platform to another.
- Reduces the use of overhead bridge or a staircase.
- Convenient to handle.
- The mobile platform can be controlled even from a distance.
- Effective change in railway system.
- Maintenance of the circuit is low.
- Reliability.

V. LIMITATIONS

- This project cannot be implemented at metro stations.
- Cannot be implemented in places where the frequency of trains is more.

VI. CONCLUSION

- The idea of automating the process of railway platform operation will upgrade safety for the pedestrians who are disabled and unable to use the staircase.
- As the system is completely automated it avoids manual errors and thus provides utmost safety to pedestrians.
- The mechanism works on a simple principle and there is not much of complexity needed in the circuit.
- This very efficient method will be more compact for scheduling the train timings for reaching the particular destination and also for crossing the suitable platforms.

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