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IJIEMR Transactions, online available on 14th Apr 2024. Link

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10.48047/IJIEMR/V13/ISSUE 04/14

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Creating instant bridge for crossing railway platforms

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Abstract—
This project is used for automatically close or opens the slider bridges in between the track trains. The slider bridge connects the two platforms through which the passenger can walk on the platform to reach on the next platform. I*R* Sensors are placed on the two sides of track. If the train reaches one I*R* sensor *1* the slider bridge will automatically slide down and allows the train to go through the tracks and then when the train leaves the second I*R* sensor *2* the slider bridge will automatically open and join back the platforms. The microcontroller will sense the presence of train by using infrared sensor. So on sensing the train on one path *sensors* will give pulses to the *Dc* motor to close the slider bridge automatically. This project presents you the detailed explanation about the automatic railway platform. Normally for crossing the railway tracks we use the staircase bridges. In critical times in order to catch our train which is on another platform we go by the bridges. Sometimes we may miss the train by going through it especially elderly people or handicapped people. So, to eradicate that problem we have proposed this system. By sensing the occurrence of the train moveable platform will connect the platforms. We have used IR sensor and ultrasonic sensor for sensing the occurrence the train. And Wi-Fi module for communication purpose which is connected to the ESP8266 wifi module.

Keywords—slider bridge, IR sensor, DC motor.

INTRODUCTION

In India so many people are travelling through the trains because it is cheapest way for transport. Daily so many old people and physically disabled people also travelling for   them stair case is difficult to reach from one platform to another platform. This idea is arranging the movable bridge for easy travelling from one platform to another platform. In most of the villages there is no stair case from 1st platform to 2nd platform. At that time people are crossing through railway tracks. Old people and physically disabled people are facing many problems at that time. For that purpose only we introducing this automatic bridge between railway platforms using WiFi module. Indian railway network is the one of the biggest trail networks in the world. Railways are recognized as a one of the safest modes of mass transportation and safety has been recognized as the key issue for the railway network. To make it a safe and reliable System is an enormous challenge. One of the few drawbacks are the unavoidable Platform crossings and the chances of mishap of the Indian Railways and the one of the Major issues of deaths occurring due to accidents. The proposed system uses sensor for opening and closing of bridges. It also confirms the presence of the train using a sensor which is placed at a certain distance away from the platform. When persons try to cross platform by avoiding the over bridge there is chance for the accidents. This can be avoided by using this technique and

very helpful for disabled person also. The modern railway structures in India aren't device-managed which are absolutely synthetic. In railroad track station usually, we use bridges. It's a long way very hard for the senior residents or handicapped humans to use the bridge. This finds beneficial answer. Specifically,the route of a train is sense by means of sensor that used for mechanically near/open cellular bridge. Sensor is positioned on both facet of track to experience the movement of train. The microcontroller will feel the trains with the aid of the use of infrared sensors. So on recognition the train on one track, the controller will deliver pulsate to the stepper motor to close the movable platform robotically.

EXISTING METHOD

In the existing method railway platforms are not well developed. Present we are using stairs to move from one platform to another platform. It is difficult for physically challenged people to use the stairs from one platform to other platform. Sometimes people crosses the railway track directly without using stairs. So, it is risky for their lives. Many time people will be moving from one platform to another through the trains present on opposite side which may be life threat.

PROPOSED METHOD

The purpose of this topic is to make the smart city because current generation is mostly busy in their work and they have not time. So we planned to make the "Railway platform bridge in railway station" to reduce the human efforts. In railway station people's needs to move from one platform to other platform for that purpose, staircase is provided. In modern times escalator or lift system is also being implemented. However, this options are either a costly affair or time consuming affair. Moreover, sometimes it becomes not useful to people like aged persons, disabled persons, etc. With this project we plan to introduce a working model of automatic railway Platform Bridge, in railway station which will bridge moves forward and backward using gear and pinion arrangement. Bridge will open when track is empty or any train will not available on track and bridge will remains closed when train will arrive on track with the help of some suitable arrangement. This will help the passengers reduce the effort in going from one platform to another. The aged and disabled person can easily move across the other side. Recently, advantages for the technology is the applying using automatic bridge is move in backward by using "timer base and manual operator or sensor base and manual operators". So technical use in having railway station. When the train will pass from platform then command will be send through microcontroller to motor to pen it.
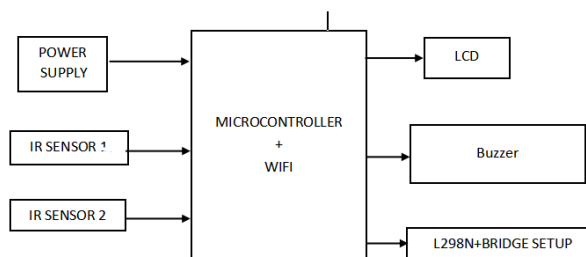

Fig 1: block diagram

WIFI MODULE:
ESP8266:
The ESP8266 is a low-cost Wi-Fi microchip, with a full TCP/IP stack and microcontroller capability, produced by Espressif Systems in Shanghai, China.

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The chip first came to the attention of Western makers in August 2014 with the ESP-01 module, made by a third-party manufacturer Ai-Thinker. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at first there was almost no English-language documentation on the chip and the commands it accepted. The very low price and the fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, the chip, and the software on it, as well as to translate the Chinese documentation.

The ESP8285 is an ESP8266 with 1 MiB of built-in flash, allowing the building of single-chip devices capable of connecting to Wi-Fi.
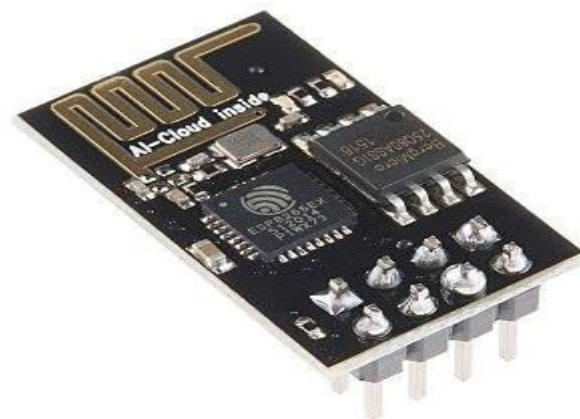
Fig 2: WiFi module

IR Sensors

An Infrared light-emitting diode (IR LED) is a special-purpose LED that emits infrared rays ranging from 700 nm to 1 mm wavelength. Different IR LEDs may produce infrared light of differing wavelengths, just like other LEDs produce light of different colors.IR sensor is a device that uses infrared technology to detect objects or changes in the environment. IR sensors can detect a wide range of physical properties such as temperature, motion, and proximity.
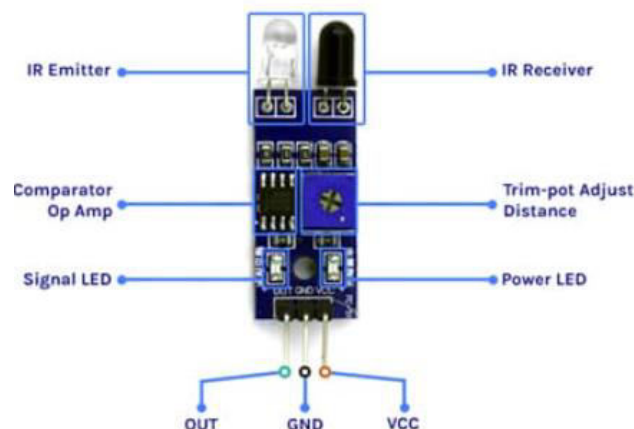
Fig 3: IR sensor module

An IR sensor module is a device that contains an IR receiver LED and other components that are used to detect and process IR signals. It typically includes an IR receiver LED, a signal amplifier, and

a demodulator circuit. The IR receiver LED is used to detect IR signals, while the signal amplifier and demodulator circuit are used to amplify and process the received signal, respectively.IR sensor modules are widely used in various electronic applications such as remote control, motion detection, proximity sensing, and more. They are commonly used in consumer electronics, robotics, and automation systems.IR sensor modules come in various forms such as simple IR receiver modules and complex IR sensor modules with additional features such as signal processing and signal filtering. Some IR sensor modules also provide an output in a digital format that can be read by a microcontroller or microprocessor.

ADVANTAGES
- Reduces the chances of human error.
- overall time reduces
- fatalities are less
- enhance reliability near platform crossing.

RESULT
AS per the given abstract the proposed plan or working will be same. As soon as there are two platforms in general i.e. platform 1 is 'a', and platform 2 is 'b' our siding platform is 's'. There will be having the availability of sliding platforms attached to per stationary platform. now whenever there will be no train on the platform this sliding platform is in close position, but when train is being coming or its at specific distance the controlling signal will be given to sliding platform and it will be going to opened before the coming the train. This is providence for the safety purpose of peoples who will be crossing the sliding platform. Along with the controlling signals, buzzers are also provided. We are going to maintain the more and more safety as well as reliability of our project. After the train departure, again the alert will be given and Barra gates of the sliding platforms will be opened after that;as regular process peoples will cross there sliding platforms safely and gradually. Highest accuracy of the system will be there, because there is lack of time for closing and opening of Barra gates and the sliding platforms (s).
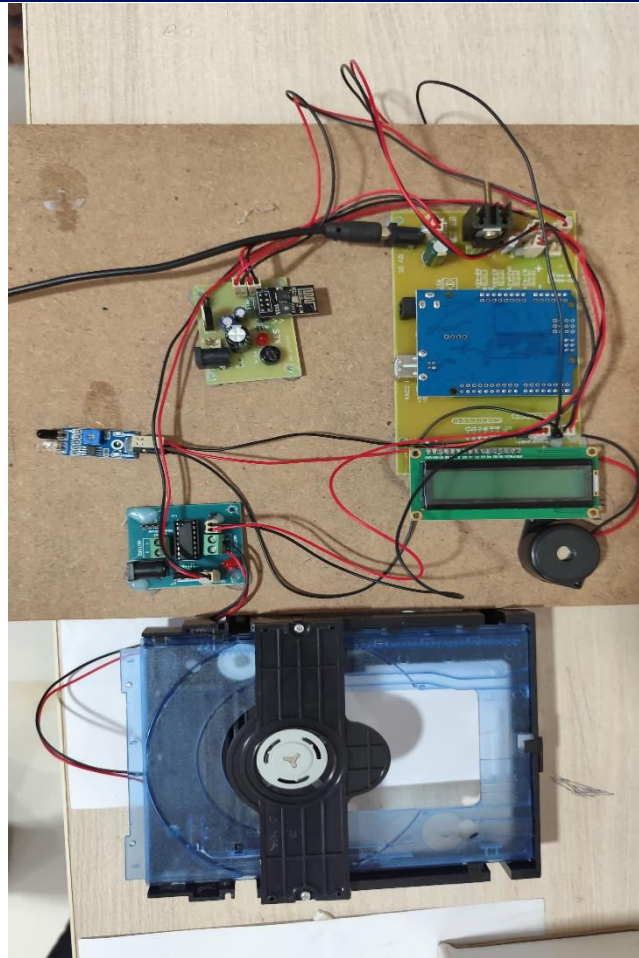
Fig 4: prototype(i)
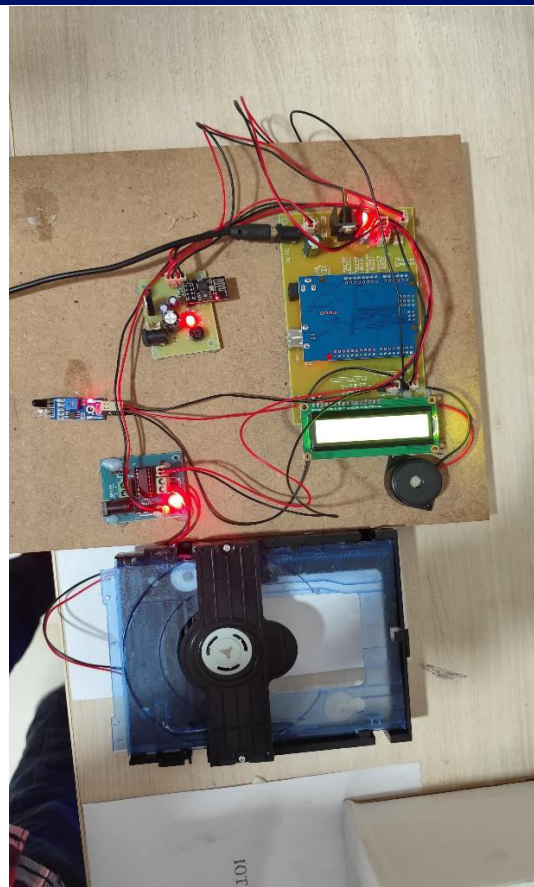
Fig 4.1: prototype(ii)

CONCLUSION

It has been observed that the tracking of train is sensed continuously, which automatically close/open the mobile platform is partially automated which is beneficial for passengers to cross the rail grade crossing. The system into a fully automated instead of climbing the staircase. This efficient method will be more compact for scheduling the train timings for reaching the particular destination and also for crossing the suitable platforms. The project will save the energy comparatively to elevator, because of this project crossing of platform will be so easy. This project prevents the level of accidents. Peoples who have factures, leg cramps, chronic foot pains and etc. they also can cross the platform easily as well as it is also helpful for the senior citizens who have problem for crossing the platform by using the bridge. As the system is completely automated it avoids manual errors and thus provides utmost safety to pedestrians.

ACKNOWLEDGEMENT

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