

## Railway Anti-Collision and Phis Plate Removal Sensing

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### ABSTRACT

Indian Railways is one of the world's largest railway networks in the world, transporting over 18 million passengers and more than 2 million tons of freight daily. Hence, the security of Indian railways becomes indispensable. The illegal removal of phis plates leads to crash. The objective of our paper is to develop a radical system for continuous monitor of phis plates using Arduino board and immediate signaling to the driver directly using cloud database on said phis plates removal, and making the closing/opening of railway gates semi-automated by developing an android application.

**Keywords :** Arduino board, Cloud Database, Android Application.

### I. INTRODUCTION

Transport is very important to carry the passengers and goods from one place to another. Better transport leads to increased rate of trade. Economic level is highly dependent on increasing the capacity and quality of transport. In recent years, many passenger and goods train have derailed or suffered from collisions due to damages in rails. The damages to tracks are predominantly due to missing phis plate accounts for the maximum number of such cases. People illegally remove phis plates for monetary benefits. Various terrorist outfits have also been involved in such detrimental activities. In other cases trains collide each other and leading to huge loss of life and trade goods.

The major harms are from the phis plates removal which would cause the loss of life's as there could be less technologies used for the intimation of the problem for the concerned and hence the technologies in our traditional transportation must be developed. The main objective of this paper is to

sense phis plate removal and give the message to the driver taking the particular path or track, to reduce the labor, to make the possible fast ways to communicate to driver, automation to close and open railway gates.

### II. EXISTING SYSTEM

Train anti-collision system consists of detection of missing phis plates and/or cracks occurring in the tracks using power relays. Signal produced by power relays are sensed by the Arduino board and halt the train automatically as per the program that has been pre-programmed on said board. GPS sensor is used in order to locate the trains on the same track, which is interfaced with the Arduino board in order to avoid any collisions that may occur. Power relays are used for supply of low voltage high ampere current (which is equivalent to range of the battery) to the tracks to detect the removal of phis plates or any cracks leading to the emergency braking protocol being executed.

### III. PROPOSED SYSTEM

The proposed anti-collision and phis plate sensing system used uses the Aurdino interfaced with Wi Fi module and the photonic sensors for the detection the phis plate removal and sending the data to the cloud server through the Wi Fi module.

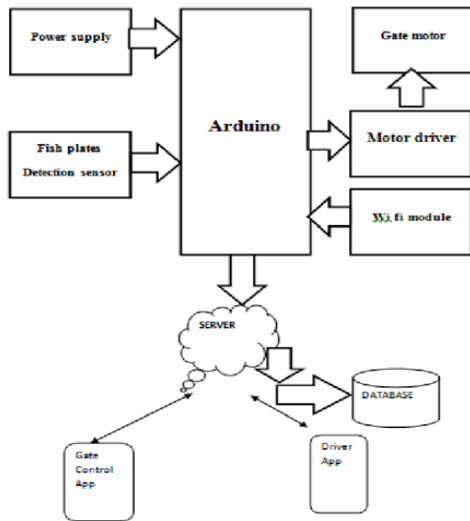


Figure 1: Block diagram

#### A. Arduino

Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. You can tinker with your UNO without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

#### B. Wi Fi Module

ESP8266 is Wi Fi enabled system on chip(SoC) module developed by Espressif systems. It is mostly

used for development of IoT(Internet of Things) embedded applications.

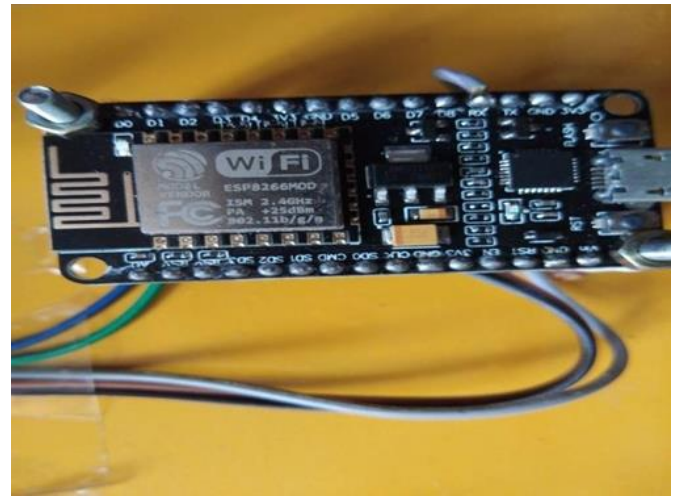


Figure 2: Wi Fi Module

#### C. Arduino interfaced with Wifi :

The Arduino controls the signals from the other modules and act accordingly to the signals. The Wi Fi module interfaced with it receives the data from sensing the phis plates, transmits it to the cloud database, and retrieves it to the driver module.



Figure 3 : The UNO Arduino



Figure 4: Arduino interfaced with Wi Fi

### C. Driver Android Application

The Driver application model is used to give the information of the phis plate sensing data that is stored in the cloud data base through the buzzer sound and the picture indicating the problem in the path of the travel.

### D. Motor driving(H-Bridge)

Generally, L293D motor driver can control two motor at one time or called is a dual H-Bridge motor driver. By using this IC, it can interface DC motor which can be controlled in both clockwise and counter clockwise direction.

### E. Gear motor

A geared DC Motor has a gear assembly attached to the motor. The speed of motor is counted in terms of rotations of the shaft per minute and is termed as RPM .The gear assembly helps in increasing the torque and reducing the speed. Using the correct combination of gears in a gear motor, its speed can be reduced to any desirable figure. The concept where gears reduce the speed of the vehicle but increase its torque is known as gear reduction.

## IV. RESULTS

Driver Application:



Figure 5 : Driver Application Login



Figure 6 : Data Retrieval Page

Gate Controller Application:

The gate controller module tracks the train and close the railway gate at the places with application instead using the the tradition ways. Hence it is semi-automated module.

Gate controller application:

Controlling Page:

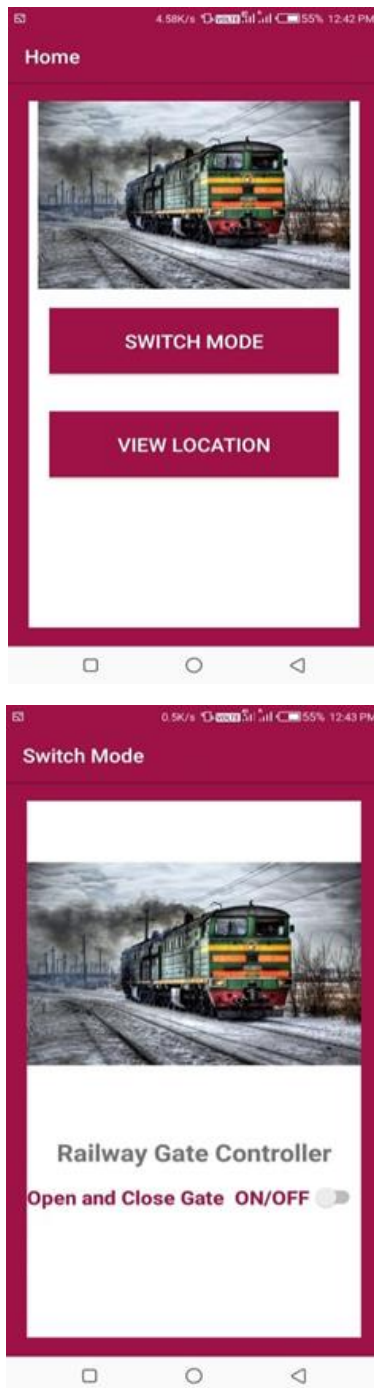


Figure 6 : The gate controller application

## V. CONCLUSION

The Indian railways being one of the world's largest railway networks in the world, transporting over 18 million passengers and more than 2 million tons of freight daily, the security of this system is more important, and hence in this paper we have

implemented the system that may help in avoid the accidents and saving the thousands of life.

## VI.FUTURE SCOPE

The future works can be done with making the centralised controlling system. And the other major solution is to develop the system of pressure detection of the tracks, so that the normal pressure and the pressure with the object can be sensed and updated so that unusual death rate of humans and animals by train crash can be decreased.

## VII. REFERENCES

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