

Trains Crash Avoidance Scheme By Consuming GSM Technology

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Abstract: Most of the accidents have been passed off with negligence of people and without proper communicate from coach traffic manipulate Station (TTCS). These days, we noticed a number of accidents passed off in railways. The accidents have been happened due to track cracking and not recognized the reverse trains on the same track at the correct time. When the educate met with an accident highest person lose their lives. To avoid this concern, we identified sensors in an effort to determine the railway monitor cracks and determine the reverse educate within the equal track inside a short while. The motive of the mission is to strengthen and design a inexpensive approach with excessive integrity and reliability for reinforcing to avoid the coach’s collision in opposed weather occasions, such as a foggy or wet and determine the monitor problems. On this, we used UV sensors, IR sensors, the LPC2148 processor to hinder educate collision as well as monitor cracks. On this paper, we alert the station grasp, driver to hinder the coach collisions with the help of GSM.

Keywords: Train Traffic Control Station (TTCS); UV Sensors; IR Sensors; GSM;

I. INTRODUCTION

Annually 11 million passengers travel by train. But the journey is not safe, because lot of the accidents happened in railway network. There are 2 types of collisions.

1. Head - on collisions
2. Rear- end-collisions

The two types of collisions occurred because of human errors. A head-on collision means front end of two trains hit each other. Head-on collisions occur on the same track only. Rear-end collisions means a train hits the train in front of it [1]. On an average for every minute at least one person dies in train crash. Annually 3 million people were seriously injured by these train accidents. The accidents were happened due to human and equipment failures, leads to safety violations. The railway board of India has referred last train accidents to implement an efficient and cost effective anti collision system. Kankan railways implemented an anti collision device. But it fails on taking active inputs and lack of communication. To provide safety to human lives and to reduce the accidents we developed a new product. Using this proposed system we can identify the both head on and rear-end collisions and can be controlled. In the proposed system we are using sensor based identification system to prevent these accidents. The proposed model contains Ultrasonic sensors (UV sensors), Infrared sensors (IR sensors), microcontroller and GSM technology. GSM technology is used for communication purpose. Using this GSM we can provide wireless communication. UV sensors are used to identify the presence of objects. IR sensors are used to identify the track cracks. DC Motor acts as a train. This

model also have one 16* 2 LCD (Liquid Crystal Display) display. It displays the information on the screen. All these components are connect to the micro controller. This is the main controller [2][3]. It belongs to the ARM7 architecture. Here we are using serial communication. In serial communication we transfer one bit at a time. For more distances serial communication is better.

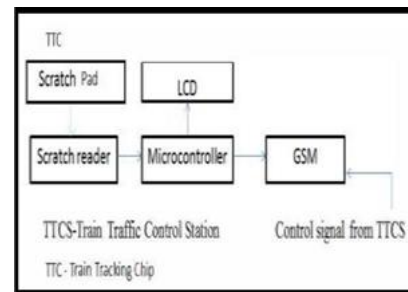


Fig.1.1. An overview of TIC and TTC.

II. AN OVERVIEW OF PROPOSED SYSTEM

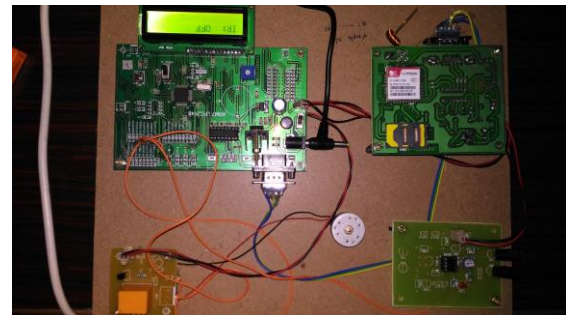
It's very difficult to stop this kind of collision, because of speed in the train, which need a lead distance to avoid. Collision happened by two ways due to human error. The 2 kinds of Collisions are, Mind - on collisions and Rear- finish- collisions. The Rail Safety Act regulates the safety of all rail transport including heavy and light-weight rail systems, therefore most public and private sidings, each tramways and tourist and heritage rail methods. The main railways controlled with the Act are the Melbourne heavy rail system, the Melbourne tram and light-weight rail network, Victoria's regional standard and broad gauge rail systems and regional tourist and heritage railways. Thus, the Railways excluded from coverage

beneath the Act include railways in mines, amusement and theme park railways and slipways [4]. This railway has certain duties to guard also to prevent destruction inside their path. But nevertheless there's great deal of train collisions are occurring due to insufficient understanding. Emergency alerts might be sent through traditional telecommunication systems for instance Walkie-Talkies or other communication items. However, Collision avoidance systems using IR sensor and anti-collision device are utilized with the Railway sector remains facing some problems due to the idea on some factors for instance cost-effectiveness, despite its growing the amount allotted to implementation in the items [5]. The Fig.1 describes the part in the TIC and TTC module. Inside the Fig. 1, it offers two modules TTC and TIC this module is combined to teach monitoring module. The TTC module could be the module which consists of sensor referred to as "Scratch Pad". This really is really the Sensor that's put in the track. The TIC module can get the information in regards to the track as well as the checkpoint within the Scratch pad when the scratch visitors scratch the scratch pad. The recognized information is going to be collected also to be sent by micro controller with GSM module for the TTCS. The PIC microcontroller can be used as this function. This micro controller can get the control signals for the scratch visitors and transfers the data for the control station by GSM. The whole TIC module is placed inside the moving Train. Inside the TIC module, GSM may be used to deliver and receive information between TTCS and TIC. Inside the Scratch Pad the train track number, checkpoint number as well as the direction is fixed. The next module for the TTC could be the TIC module, which consists of sensor referred to as Scratch visitors. The TIC module also consist microcontroller, live view screen display and GSM module. In this particular project, train collision avoidance system remains designed, simulated and examined. The simulation remains done while using the Lab VIEW and testing remains moved out while using the developed prototype. The communication involving the microcontroller and GSM Module is examined. The flow of Lab VIEW that is frequently used inside the TTCS may also be examined for individual's particular messages within the TIC. The TTCS module was built using GSM plus a Pc. Notebook system has software particularly produced to recognize the collision [6]. We utilize the Lab VIEW software for your implementation in the control station. Lab VIEW gets together the introduction of user connects to the development cycle. Lab VIEW programs are classified as virtual instruments (VIs). Inside the Lab VIEW Controls are inputs, they enable someone to provide information for the Mire. The structures and procedures are situated around the

Functions palette and are placed on the trunk panel. With one another controls, indicators, structures and procedures will probably be known in line with the block used [7]. An important feature of Lab VIEW could be the extensive support for interfacing to items for instance instruments, cameras, as well as other items. Clients typically interface to hardware by either writing direct bus instructions (USB, GPIB, Serial...) or using high-level, device-specific, motorists that provide native Lab VIEW function nodes for adjusting the unit.

III. PROPOSED SYSTEM

In proposed system we will provide security and collision avoidance with sensors and GSM technology.



With the help of IR sensors if any object come to before the train it will inform the controller, the controller will send the information to the relay. It will operate then the train automatically stopped. This total information will be send to operator with the help of GSM module.

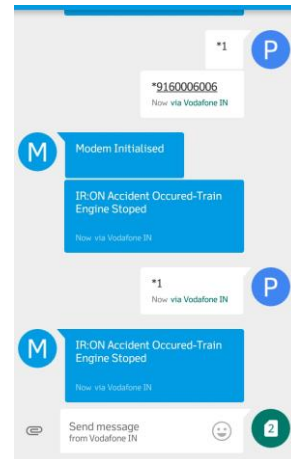


Fig.3.2.the output of proposed system.

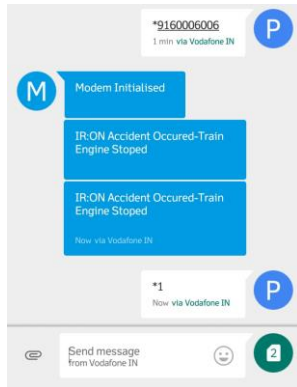


Fig.3.3.Communication between operator to GSM.

Then restart the train and run with the help of GSM technology.

IV. CONCLUSION

The accidents between trains are increasing due to negligence of intelligent techniques implemented inside the trains and improper control signalling within the Train Traffic Control Station (TTCS) inside the recommended system the Train Identification Chip (TIC) built-along with GSM (Global System for Mobile Communication) module may be used to speak involving the train as well as the Train Traffic Control Station. The TIC inside the train and TTC on course at certain distances might make the reassurance of train safety every single check point crossings. Inside the TTC [Train Tracking Chip] we have fixed the scratch pad. This scratch pad could be the sensor which will give necessary signals to monitoring in the train. It has been believed once the machine is implemented inside the railway systems, train accidents might be prevented. This collision between trains is calculated and colliding trains were alerted. With this particular project train collision is stopped. Many human lives and a lot of characteristics might be saved when the method is implemented.

V. REFERENCES

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