S Srinu* et al.
(IJITR) INTERNATIONAL JOURNAL OF INNOVATIVE TECHNOLOGY AND RESEARCH
Volume No.6, Issue No.6, October - November 2018, 8902-8904

Practical Implementation of Train Accidents Avoidance System Using IOT Platform

S SRINU
M. Tech student, Dept of ECE, Nishitha College of Engineering & Technology, Hyderabad, TS, India.

P SRINIVAS
Assistant Professor, Dept of ECE, Nishitha College of Engineering & Technology, Hyderabad, TS, India.

Abstract: **For railroad practices far and wide, plan back mischance catastrophes on occasion happen, accomplishing noteworthy challenges and property disaster. To maintain a strategic distance from the event of such scenes, a novel early admonishing system for plan following interim in light of bound together activity control (CTC), or only CTC between times preparing, is proposed. Right when joined with the current changed arrangement security, the seeing of prepare after between time is expanded. The proposed methodology enlists the base success break powerfully and contrasts it and the certified spatial division. Precisely when the genuine spatial separation isn't as much as the base flourishing interim, especially when the ATP is to be blamed, the proposed strategy is fit for raising the alert and taking control measures to sensibly keep up an essential detachment from raise mischance setbacks. In the interim, this procedure clears the manual supervision of prepare task, in like way quieting work control, and enhances the appropriateness of supervision.**

Keywords: **CTC, Train Tracking, IR Sensor, Ultrasonic Sensor, IOT Technology, Cloud, Database.**

I. INTRODUCTION

Railroad hailing structures consolidate the united development control (CTC), get ready control system (TCS), PC based interlocking (CBI), non-ensured repeat move track circuit (ZPW-2000), and other hailing encourage systems, for instance, hailing microcomputer checking structure, dynamic watching structure, get ready number after and remote after system, remote system for arranging transmission and power structures [1]. Regardless of the way that the Chinese railroad TCS with different levels can meet the necessities of most rail lines in China, CTCS, with its stunning cost of improvement and support, are over-dependent on trackside structure. To improve the interoperability of different plan control systems, fiscally wise TCS adventures completed in Europe and the United States hope to update overall forcefulness. In this way, using creative headways to manufacture a front line get ready control structure (NGTCS), which improves prosperity and interoperability while diminishing establishment and bolster costs, is a fascinating overall research subject. Partaking with China's "one belt, one road" method, the creative work of bleeding edge Chinese get ready control structure (NGCTCS) is unpreventable. The inspiration driving NGCTCS is to redesign all inclusive power and to get thought by and large. Thusly, breaking down the essentials and key advances and proposing a reference NGCTCS scheme are imperative to acclimate to the making example of improving security and capability and to diminishing costs and unpredictability. Whatever is left of this paper is dealt with as takes after. Portion 2 separates the best in class of CTCS and ponders the system structure and concentrated characteristics of five customary TCS adventures. Portion 3 shows the necessities and key advancements of NGCTCS and proposes a structure plot. Region 4 gives the end. The accompanying break is the partition between the goings with prepares and the principal get ready. The base prosperity interval considers the ensured errand of the get ready and the driver's comfort, with reference to the base division between trains. The accompanying break direct effects plan passing farthest point and action security. The rule factors that choose the base security interval fuse get ready speed, the extra partition in the midst of the time sneaking past between the plan control response and the driver's certification hail, the full braking division of the set up, the detachment required for guarding against the bumbles created from equipment and executives, the comfort and prosperity of driving partition, the length of the set up, the restrictive speed of the track switch, the length of the station throat, the period of the trading of the station undertakings, the viable length of the basic rails in station, et cetera. Right when the accompanying break partition isn't as much as the plan emergency braking detachment, rear setback will occur.

II. RELATED STUDY

The Internet of Things (IoT) is a framework in which all things have a representation and a presence in the Internet. More specifically, the Internet of Things aims at offering new applications and services bridging the physical and virtual worlds, in which Machine-to-Machine (M2M) communications represents the baseline communication that enables the interactions between Things and applications in the cloud. The IoT will create a huge network of billions or trillions of “Things” communicating each other. The IoT is not subversive revolution over the

existing technologies, it is comprehensive utilizations of existing technologies, and it is the creation of the new communication modes. The IoT blends the virtual world and the physical world by bringing different concepts and technical components together: pervasive networks, miniaturization of devices, mobile communication, and new ecosystem. In IoT, applications, services, middleware components, networks, and end nodes will be structurally organized and used in entire new ways. IoT offers a means to look into complex processes and relationships. The IoT implies a symbiotic interaction between the real/physical and the digital/virtual worlds: physical entities have digital counterparts and virtual representation; things become context aware and they can sense, communicate, interact, and exchange data, information, and knowledge. New opportunities will meet business requirements, and new services will be created based on real-time physical world data.

III. AN OVERVIEW OF PROPOSED SYSTEM

The main function of this block is to check for track continuity and control railway gate operation. First it checks for track for any kind of discontinuity using track continuity circuit. Upon receiving appropriate signal it sends signal to train control system throw zigbee to start or stop the train. It has a manual start and stop switch too which can start/stop train remotely from track control block with the help of track continuity circuit. Second, it controls the railway gate in the train-road junction. Once the first IR object sensor connected to microcontroller detects train approaching it sends signal to controller when then closes the gate using relay and DC motor. When the second IR object sensor detects train leaving it sends signal to controller when then opens the gate using same replay and DC motor. The two sensors are placed at appropriate distance to perform required operation. The messages related to all the operations that occur in both train and track control system are displayed on LCD screen connected to the microcontroller. This system performs four major functions curve detection, obstacle detection, fire detection and speed control of train. We have two IR sensors, one fitted in front of train which acts as obstacle sensor and other fitted to left side of train to behave as curve detecting sensor. These two sensors are connected to train control block placed on train. We have placed objects near curves to help curve detection functionality. With the appropriate signals received from tack control block train starts. The IR obstacle sensor fitted in front of train continually senses the track in line of sight, if an obstacle of large size which may derail train is detected then signals is sent to control block which immediately stops train using DPDT relay.

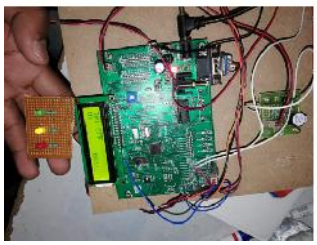

Fig.3.1. Working model.

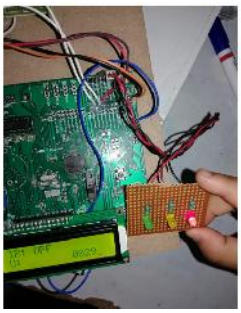

Fig.3.2. Sensor Activated time red color light indication.

Fig.3.3. Output results.

IV. CONCLUSION

Level Crossing confirmation structures is delivered using microcontroller to give additional security shield at watched out for an unmanned level convergences, through a shifting media sign to road customers. The modified railroad entryway controller along these lines can be used in unmanned level convergences to diminish the occasion of incidents. Since the arrangement is completely electronic it has a tendency to be used in remote towns where no station expert or line man is accessible. Moreover it saves package of times as it is modernized however manual structures put aside time for the line man to instruct the station pro to close and open the entryway which will eat up a considerable measure of time. Moreover since it is completely modernized there are fewer shots for bumble to occur. Along these

lines this arrangement is particularly useful in railroad applications.

V. REFERENCES

[1] Arun.P, Saritha. S,K .M. Martin , Madhukumar. S "an efficient train anti-collision system using LEO two way sattelite communication.

[2] Arun. P, Saritha. S, K. M. Martin, Madhukumar. S "Simulation of zigbee based TACS for collision detection and avoidance for railway traffic.," in International conference on advanced computing & communication technologies for high performance application, paper ID 51,June 2012.

[3] Bhatt, Ajaykumar A, „An Anti-Collision Device (ACD) Network – A train Collision Prevention System (TCPS)".

[4] David Barney and George Nikandros: Calculating Train Braking Distance, Signal and Operational Systems Queensland Railways Brisbane 4001, Queensland, Australia.

[5] Risk Analysis of Derailment Induced by Rail Breaks − a Probabilistic approach, Jianmin Zhao, University of Birmingham, Andrew H. C. Chan, Professor, University of Birmingham, Alan B. Stirling, University of Birmingham.

[6] Masayuki Matsumoto, "The Revolution of Train Control System in JAPAN", 2005 IEEE.

[7] Yoshinon Kon, "The New Train Control System ATACS by Using ADS Technologies", Proceedings of the 2nd International Workshop on Autonomous Decentralized System, 2002 IEEE.

[8] Marina Aguado, Eduardo Jacob, Purification Saiz, "Railway Signalling Systems and New Trends in Wireless Data Communication", 2005 IEEE.

