

ICT Enabled Smart Display For Unmanned Railway Level Crossing Application

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Abstract:

In some rural areas of our country, accidents in the unmanned railway level crossings are very common and increasing day by day without knowing the proper information of arrival of train. Since, India’s railway system is one of the largest railway networks all over the Asia and with this mammoth system, every level crossing in our country cannot be handled manually. Thus the aim of our project is to save lives of people crossing unmanned railway crossings by providing cost effective ICT enabled smart display. The information about arrival of train at unmanned railway level crossing is being sent by the authenticated person to the destination using Wi-Fi/LAN/USB/GSM through IOT. The received message is processed using HD-C10 processor and notified to the public through smart digital display.

Keywords — Unmanned Crossings, LED Display, HD-C10 Processor

I. INTRODUCTION

Indian Railways which is a boon of economic growth of the country and the largest network in our whole continent is deprived of safety of people. This is due to a fact that with such huge system it is difficult to keep an eye on every level crossing manually[1]. Thus, the unmanned railway crossings are of major concerns of rising railroad accidents. So we are introducing our smart unmanned railway level crossing system which is economic, user-friendly, efficient with the ability to alert the pedestrians about the arrival of train using the smart display with the help of information sent by the authenticated person at the nearby railway station through GSM/Wifi/LAN. Thus by seeing the

processed information on the display board, people gets alerted about the arrival of train and attain the safe journey.

II. OBJECTIVE

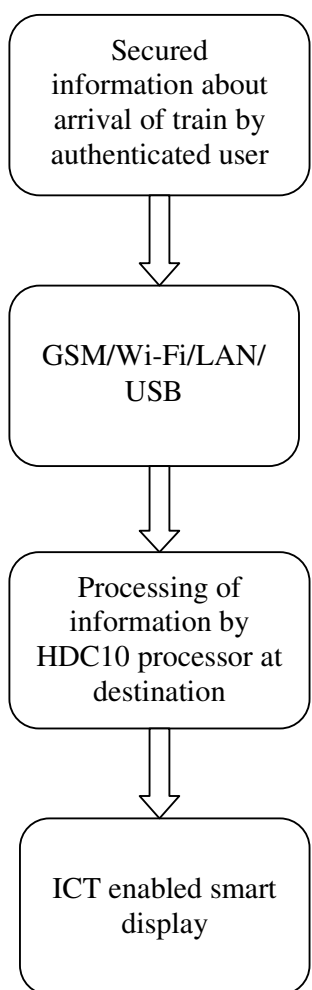
- To develop an information system which can inform the users about the arrival of train before they approach unmanned railway level crossings at remote locations.
- To avoid accidents at unmanned railway level crossing.
- To safeguard the human life through effective communication.

III. PROPOSED SYSTEM

With the help of smart technology, the proposed system consists of three units namely as follows:

- Monitoring unit
- Processor unit
- Display unit

IV. FLOWCHART

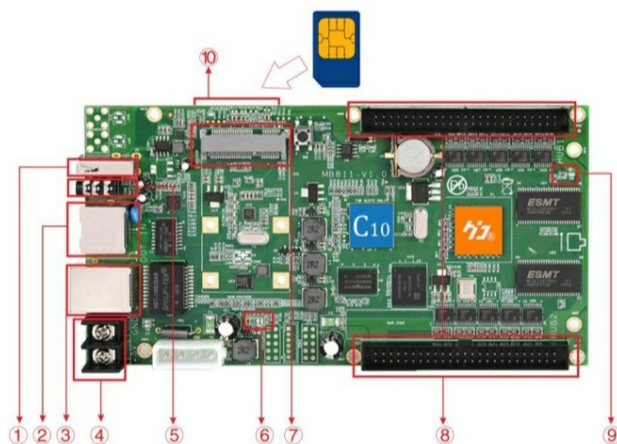


V. METHODOLOGY

The Internet of Things (IOTs) can be defined as connecting the various types of objects like smart phones, personal computers, tablets and digital displays to internet which brings in very new fangled type of communication between those things and the public. GSM is a wireless modem that works with GSM wireless network. Wi-Fi is a wireless networking technology which provides wireless high speed internet and network connections. Thus in this project with the integration of all these technologies, it is planned to erect the digital displays at the unmanned railway level crossing spot which is both internet enabled or non-internet enabled (GSM-cellular network) to send data using IOT. By using GSM/Wi-Fi/LAN/USB through IOT the information about arrival of train at the unmanned level crossing is sent by the authenticated user at the nearest railway station. The encrypted message reaches the destination where it gets decrypted. The processor process the information sent by the authenticated users at the nearest railway stations and the information is being communicated to the public with the help of smart digital displays erected at the unmanned railway level crossings. Thus the information provides proper precaution to the public who tries to cross the level crossing thereby prevents the accident and safeguard their lives. Thus the project paves the way for automated unmanned railway level crossing using ICT enabled smart digital display through I2C/IOT communication technology.

VI. PROCEESOR UNIT

HD-C10 is the processor used to process the information sent by the authenticated user. This processor not only process the text information but also helps in processing the information of high definition programs like video, image, animation, etc. The system includes two parts namely the HD-C10 controller and the software called HD player. The processor will be directly communicated through GSM/Wi-Fi/LAN/USB with the help of IOT.



The following are the features of HD-C10 Processor

1. USB port, connect USB device, such as: U-disk and mobile hard disk drive.
2. Input network port, 100M network port.
3. Output network port, 1000M network port.
4. Power interface, 2 Pin power terminal connect with 5V power.
5. Audio output interface, standard dual channel stereo output.
6. Power LED-D2 & D1 Lamps indicates working.
7. MINIPCIE connect 3G model or WIFI model (selectable).
8. 1 of 50 pin, connect HUB board, connecting with all kind of cabinet interface through HUB.
9. Display lamp - D7 Green Lamp indicates normal working.
10. The back SIM card slot, inserted with 3G/4G card for 3G/4G internet solutions.

VII. SOFTWARE TECHNIQUE

HD player is the software used to develop the source code of the HD-C10 processor. The software which is more user-friendly can be installed to the PC or to the hand held mobile phone. After the successful installation, the processor type and the dimensions of the display board should be selected in the software. With the selected dimension, the information of any kind such as text,

image, video, animation can be sent from the remote location to the destination through effective communication and smart technology networks.

VIII. CONCLUSION

In the competitive modernized world, replacements and new innovations reduce human complexity in operating the heavy system like unmanned railway level crossings in rural areas. Thus, our project provides the successful idea and implementation of ICT enabled smart display board at remote location which is effectively communicated through GSM/Wi-Fi/LAN/USB options using IOT by the authenticated user with the help of HD-C10 Processor and HD Player software.

To ensure the safety of pedestrians and passengers in the train our project acts as an efficient and effective solution in avoiding the accidents at unmanned railway level crossings. Without any data loss, it also acts a new initiative in the field of security.

IX. REFERENCES

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