

DMI ENGINEERING COLLEGE

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SMART RAILWAY AUTOMATION SYSTEM USING IOT- A

LITERATURE SURVEY

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Abstract:

Even with greatest of ideas to avoid railway accidents, many trains accidents still happen worldwide. This paper shares an idea on how to avoid train collision by using an automated control incorporated in the trains. In this proposed paper we have implemented ideas such as pre-crashing using RFID sensor, ultrasonic sensor in-order to choose an array of commands which would run as per the conditional algorithm created in the microcontroller. We would also have a EPM to control the speed of the motor to lessen speed. This system will be more efficient since it was fully automated and also it was cost effective.

Introduction :

We wanted to be apart of our surrounding with some change and advancement so that it can bring the better life of the middle class and lower class people to travel in high security and advanced locomotions the train is one and only most widely used transportation, and not only for this they are used for goods transportation also. Indian railways are not able to facilitate the customer properly due to crowded amount of people.

In February a train was travelling in the forest range of Bihar state were five elephant were hit by the train which was moving at high speed. Collisions of train happened in last year June were the Indian railway minister felt guilty. a moderate rate of 2% fatalities compared to all other types of crashes, it represents the highest rate of injuries that is 22% and also the highest percentage of loss of life, being 28%. There have been enormous efforts to develop an algorithm in the field of automation of smart

railways Systems (ASRS). An intelligent railways transportation system (IRTS) is an advanced application, which aims to provide services and protect the life of people inside and also outside the railway.

Existing system:

The existing system in semi automated railways accidents are occurring at frequently, consideration this in mind we want to bring some change and make it effective so that it becomes a compulsory and law for practice.

Once the implementation of smart train with lot of new technology many ideas have been proposed for essential advancement in developing system meant for better travelling live hood. A system based on vision and video processing has been proposed that could employ a camera to take video images and extract features for finding the obstacle and behaviour of obstacle around and draw conclusion to avoid accidents. Live camera that analyze the images from the video to recognise obstacle and sends an alert if it detect a automated engine breaking using EPM module.

Most of the public transportation infrastructure in European cities is easily accessible. The majority of the tram/train stations are located in an open and "gate-free" environment, easy available to everyone and hence introduces potential malfunctions in the system. This is why fare dodging (hopping on the tram/train without paying for a ticket) is simple. This paper suggests a conceptual framework and architecture to capture free riders (fare dodgers) in an early stage by using a RFID distance scan combined with people counting techniques as a tool to locate and monitor passengers. As a case study this paper uses the ticketing system in The Netherlands. It is a RFID-based ticketing system which uses a smartcard called OV-Chip card. It explains the current setup in The Netherlands, systems and architectures used and shows where possible problems and improvements could be achieved. An experiment is done to measure certain basic distance read ranges in different situations and locations. The results show that by making use of a different system architecture (RFID technology and People Counting Techniques) an improvement in catching free rides (fare dodgers) in a much earlier stage is inspectors.

In India, most of the commercial transport is being Carried out by the railway network and therefore, any problems in the same has the capacity to induce major damage to the economy-notwithstanding the societal impact of loss of life or limb. This paper proposes a cost effective yet robust solution to the problem of railway crack detection utilizing a method that is unique in the sense that while it is simple, the idea is completely Novel and hitherto untested. The paper discusses the technical and design aspects in detail and also provides the proposed robust crack detection algorithm. The paper also presents the details of the implementation results of the RRCDS utilizing simple components inclusive of a GPS module, GSM Modem and LED-LDR based crack detector assembly. The proposed scheme has been modeled for robust implementation in the Indian scenario.

Internet Of Things	Image Processing	Sensors	EPM
A IOT approach to crack detection, reporting and navigation Station platform is specified using IOT	To capture the live video	Automatic crack Detection	To reduce the speed of train and stop the train
		CNN IBN India dates	
		Automatic track within the range specified changing	
		Number of people counting	

Problems to be addressed:

In the literature survey, it has been inferred that, all the previous works on this topic either involve a system in which, the mechanism used to collect real time data such as camera, sensors etc. are all placed external to the railway track and train, and detection. Systems proposed, developed and implemented so far, hardly enable us to detect crack. Crack detection systems are very few, and use methods such as detection of breaking intensity and communicating to other networks etc.

Proposed Framework:

The proposed work consists of ARM processor based CC3200 microcontroller, sensor unit and a control unit. In CC3200 has an inbuilt UART setup, GSM modem and 32bit I/O ports. The 32 bit register bits are directly connected to ALU allowing two independent registers to be accessed for one single instruction executed during one clock cycle. A JTAG interface is available for Boundary-scan, On-chip Debugging support for programming. In our paper automatic track changing features added it will reduce manpower. This paper also includes automatic ticket booking using RFID technique. It will save time. It has another feature that is people counting; it will allow only the required number of people to inside the train when the required number of people enter into the train it will automatically close the door.

Conclusion:

By using this Autonomous vehicle for the purpose of railway track inspection and crack detection, it will have a great impact in the maintenance of the tracks which will help in preventing train accidents to a very large extent. The regions where manual inspection is not possible, like in deep coal mines, mountain regions and dense thick forest regions can be easily done using this vehicle. By using this vehicle for the purpose of Railway track inspection and crack detection and automated SMS will be sent to pre-defined phone number whenever the vehicle sensors detect any crack or deformation. This will help in maintenance and monitoring the condition of railway tracks without any errors and thereby maintaining the tracks in good condition, preventing train accidents to a very large extent. Railway track crack detection autonomous vehicle is designed in such a way that it detects the cracks or deformities on the track which when rectified in time will reduce train accidents.