

RAILWAY TRACK CRACK DETECTION AND DATA ANALYSIS

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ABSTRACT

The main aim of this project is railway track crack detection system using an Internet of things like as data analysis and Railway track monitoring and detect the crack and Prevents the train accidents and saves peoples life .This project pertains to a process for monitoring the condition of rail on train tracks and more specifically has the object of the identification of defects detected by monitoring equipment on the tracks to be checked to allow maintenance crack to subsequently find these defects. When we give the supply to the device, each sensor will produce the signal related position with the rail.

I.INTRODUCTION

The project relates to the location of singular points in the automatic control of railway tracks. According to a possible embodiment, the railway carriage carrying the control equipments is provided with sensor orientated to detect the crack and magnetic penetration sensor used to detect the crack. Hall sensor is used to detect the flow of magnetic flux in magnetic penetration sensor and GPS will gives the related location This project pertains to a process

for monitoring the condition of rail on train tracks and more specifically has the object of the identification of defects detected by monitoring equipment on the tracks to be checked to allow maintenance crews to subsequently find these defects. When we give the supply to the device, the magnetic penetration sensor will produces the mantic flux

II. LITERATURE SURVEY

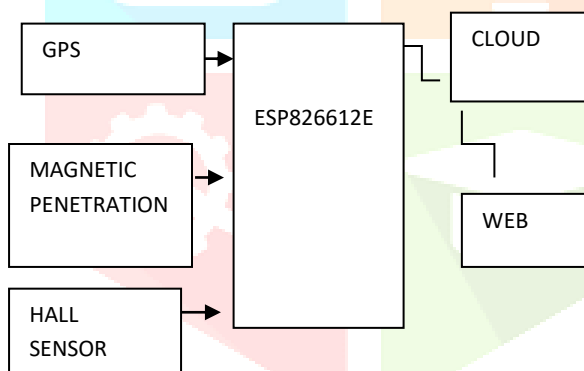
The main objective of the track crack detection and health monitoring In base station between two signals any track are broken, cut the track, and any fault means signal is transmitted to signal engineer, because 5volt power will be passing to track This technique used only for base station.

Microcontroller: ATmega162 The ATmega162 is a low-power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the ATmega162 achieves throughputs approaching 1 MIPS per MHz allowing the system designed to optimize power consumption versus processing speed.

The GPS is used to receive the position data from the vehicles and display on a digital map. It too will have the interface to the communication link. Enhanced features include video features, trace mode, history track, vehicle database, network support.

Oral communication through telephonic and telegraphic conversations. IR sensors are also used to identify the crack in the railway. LASER, proximity sensor and detectors are, use to satellite communication. No combined solution for collisions avoidance, derailment and railway gate control. In this process is high cost, difficult, time wastage

BLOCK DIAGRAM



Things in IOT:

The "Things" in IOT usually refers to IOT devices which have unique identities and can perform remote sensing, actuating and monitoring capabilities. IOT devices can exchange data with other connected devices and applications (directly or indirectly), or collect data from other devices and process the data either locally or send the data to centralized servers or cloud-based application back-ends for processing the data, or perform

some tasks locally and other tasks within the IOT infrastructure, based on temporal and space constraints

III. MODULE DESCRIPTION

GPS(GLOBALPOSITIONING SYSTEM)

The Global Positioning System (GPS) is a radio based navigation system that gives three dimensional coverage of the Earth, 24 hours a day in any weather conditions throughout the world. The technology seems to be beneficiary to the GPS user community in terms of obtaining accurate data up to about 100 meters for navigation, metre-level for mapping, and down to millimetre level for geodetic positioning. The GPS technology has tremendous amount of applications in Geographical Information System (GIS) data collection, surveying, and mapping

NODE MCU:

ESP-12E Wi-Fi module is developed by Ai-thinker Team. core processor ESP8266 in smaller sizes of the module encapsulates Ten silica L106 integrates industry-leading ultra low power 32-bit MCU micro, with the 16-bit short mode, Clock speed support 80 MHz, 160 MHz, supports the RTOS, integrated Wi-Fi MAC/BB/RF/PA/LNA, on-board antenna. The module supports standard IEEE802.11 b/g/n agreement, complete TCP/IP protocol stack. Users can use the add modules to an existing device networking, or building a separate network controller. ESP8266 is high integration wireless SOCs, designed for space and power constrained mobile platform designers. It provides unsurpassed ability to

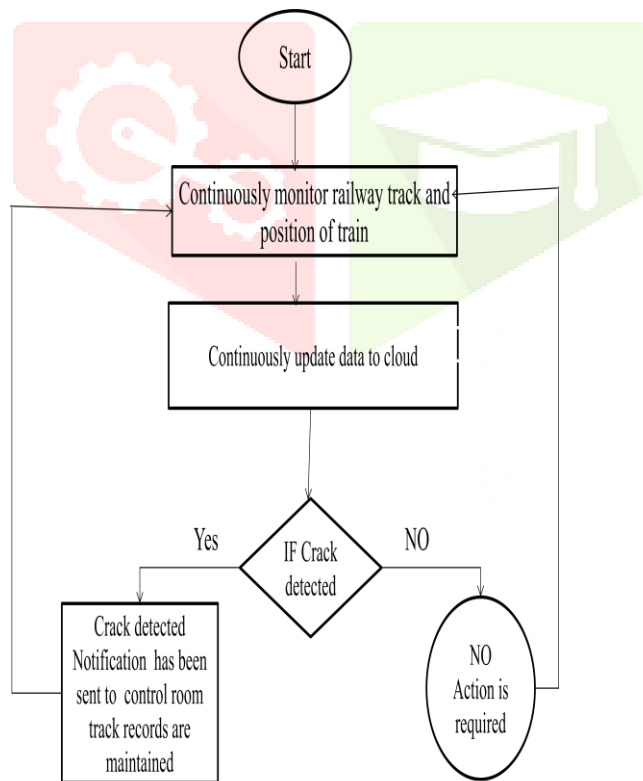
embed Wi-Fi capabilities within other systems, or to function as a standalone application, with the lowest cost, and minimal space requirement.



HALL SENSOR

The Hall Effect is the most common method of measuring magnetic field and the Hall Effect sensors are very popular and have many contemporary applications. For example, they can be found in vehicles as wheel speed sensors as well as crankshaft or camshaft position sensors. Also they are often used as switches, MEMS compasses, proximity sensors and so on.

Flow chart



IV. SOFTWARE DETAILS

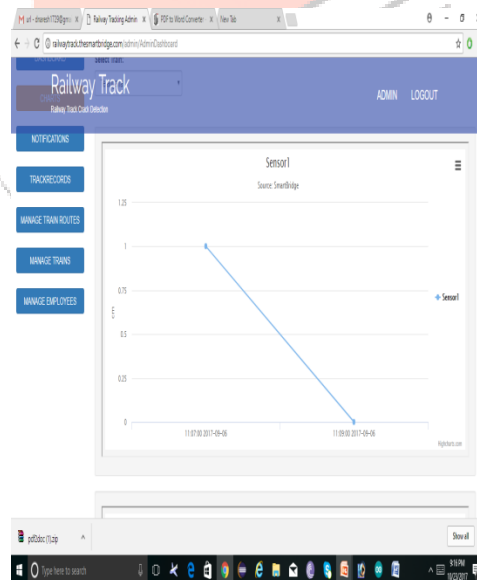
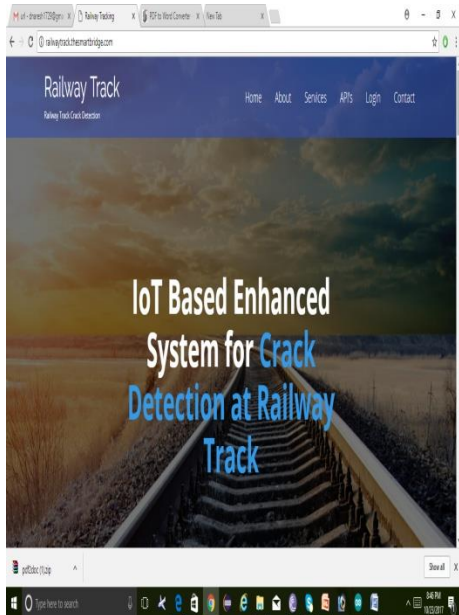
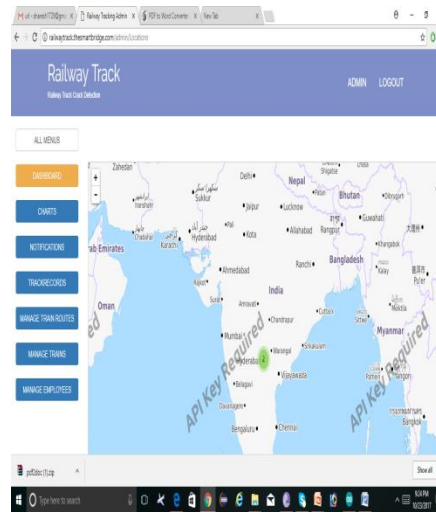
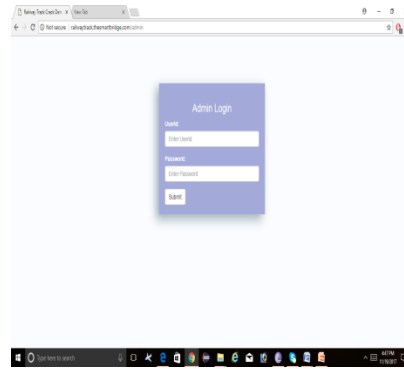
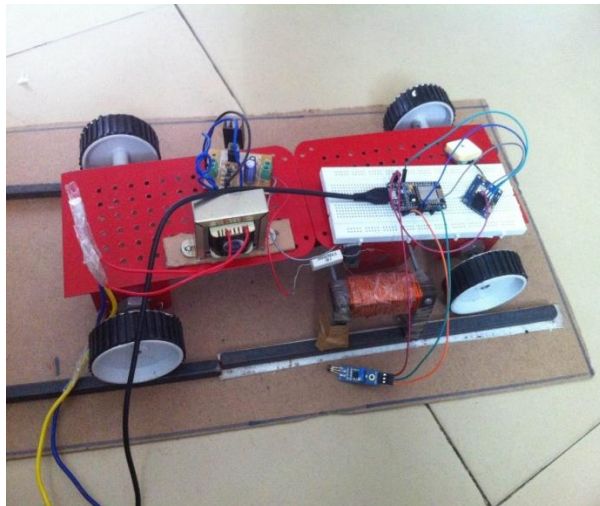
Arduino IDE:

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuino hardware to upload programs and communicate with them.

Programs written using arduino software are called sketches. These sketches are written in the text editor and are saved with the file extension. The editor has features for cutting for searching text. The messages are gives feedback while saving and exporting and also displays errors. The console displays text output by arduino software including complete error messages and other

information. The toolbar buttons allows you to verify and upload programs, create, open and save sketches.

V. RESULT



Railway track crack detection and sensor graph analysis

S No	Subject	Location	Status	CreatedOn
1	Crack is Detected On (2017-09-06 11:09:09)	Professors Quarters, Amberpet, Hyderabad, Telangana 500077, India	CRACK DETECTED	2017-09-06 11:09:09
2	Crack is Detected On (2017-09-06 11:07:55)	ICT Colony, Tanaka, Secunderabad, Telangana, India	CRACK DETECTED	2017-09-06 11:07:55

VI. CONCLUSION AND FUTURE SCOPE

This system involves instrumentation system for detecting the railway track crack detection when the crack detected. The detected data from sensors is continuously uploaded to the cloud hosted for railway track crack detection. This system also enables notification services for the employees.

An electromagnetic system for rail detection and traction enhancement comprises, in a preferred embodiment, Wheel axles, wiring coils around the Wheel axles, respectively, and a power source coupled to the .Wiring coils for supplying power to produce electromagnetic flux. The Wiring coils produce opposite magnetic north and South Pole pairs on the axles.

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