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| S.NO | TITLE | PROPOSED  WORK | TOOLS /ALGORITHM | TECHNOLOGY | ADVANTAGES/  DISADVANTAGES |
| 1. | Automatic fault detection of railway track system based on PLC  (ADOR TAST) | The sensor is used to detect the defect in the train and the ultraviolet sensor is used to detect the obstruction in front of the train | International journal of recent research aspects. | 1.PLC  2.ADAR TAST | Easily predict the train track. |
| 2. | Railway track fault detection system using IR sensors and Bluetooth technology | In the event of any defect on the track it will detect using IR sensor and then send message to the Android | Asian journal of applied sciences and technology | IR sensor,  Bluetooth technology | Prevention of railway accident |
| 3. | Automatic railway track detection for Indian railways | The automatic railway route automatic Detects the fare of the Indian IEEE rail automatically and detects very quickly without human intervention | International journal of current engineering and scientific research  And IEEE | IOT | Quickly detect without human intervention |
| 4. | Train track fault detection system | Rail crushes have been identified as a major cause of accident in the past. So, the solutions to the system are reboot to detect crack in the train track and when the reboot to detect error | International journal of current engineering and scientific research  IJCESR | IOT | Crashes have been identified and identify the major cause in rail accidents |

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| 5. | Automated railway Track fault detection system using robot | An IR assembly that the exact location of a fault track was quickly repaired so that many lives could be saved. | International conference on new frontiers of Engineering | Ultrasonic sensor | The function is to detect the fault and calculate the distance. |
| 6. | Self-power for railway track monitoring using IOT | Rapid increase in surveillance of system, buildings, vehicles and machines using sensors | IOSR | IOT  Sensors | Any crack detects it immediately and sends the cloud crunch to the user's mobile phone. | |
| 7. | Smart fault detection system for Indian railways | The device built will be attached to a train engine and contains a sensor that can detect | Scientific and technology research | Ultrasonic sensor  Raspberry pi | Detects the few meter cracks and the signal will receive to the train driver. | |

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| 8. | Rationalization of center City railway network | Facilities suitable for through as well as local traffic rail clearance line capacity. | Commuter rails |  | Rail clearance  Access to rail / truck intermodel terminals. |
| 9. | Condition - Based and predictive maintenance. | Sensor and scanning technologies  Signal processing and data acquisition. | German Railway DB algorithm | IR sensor | Decision support and operatimation  Analysis and prognosis. |
| 10. | Automation of train driving | Obstacle detection system and ATO functional system. | Rio tinto autoHaul system. | Active sensor and passive visual cameras | ATO driverless, unattended. |

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| 11. | Technologies for efficient and secure border crossing. | Electronic dynamic weighing scales. Multifunctional intelligent gate system. | ESCAP SCBTM  OCR | RFID, laser scanning, imaging and detection. | Multifunctional intelligent gate system.  Options and adapted ESCAP SCBTM for railways. |

Literature Survey of Smart Solution for Railways

Based on Internet of Things

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Abstract

Smart Solutions for railways is designed to reduced the work load of the user and also the use of paper.

A Web page is designed for the public where they can book tickets by seeing the available seats.

After booking the train, the person will get a QR code which has to be shown to the Ticket Collector while boarding the train.

The ticket collectors can scan the QR code to identify the personal details.

A GPS module is present in the train to track it. The live status of the journey is updated in the Web app continuously

All the booking details of the customers will be stored in the database with a unique ID and they can be retrieved back when the Ticket Collector scans the QR Code