

# Railway Track Monitoring for Obstacles and Damage Detection using AI and ML

Nikitha M. R<sup>1</sup>, Nishchitha M<sup>2</sup>, Vismaya T. M<sup>3</sup>

B.E, Computer Science and Engineering<sup>1-3</sup>

Kalpataru Institute of Technology, Tiptur, India

**Abstract:** *Railway Track Tracer System for creature detection is a system for detecting object and fire on the railway tracks. This system will help to avoid many accidents that occur on rails. This system frequently monitors the railway tracks using a camera, so that the presence of object can be easily identified and then necessary actions can be taken to prevent accidents. Internet of Things is the most studied field and its applications are endless. Internet of Things (IOT) is implemented to give an up-to-date update on the railway management. In this mode IR sensor is used for checking the availability of the platform. This system is used update the platform availability to the upcoming train to avoid the prevent accidents. To detect fire and automatic engine detachment. To update the platform availability. There has been an upsurge in railway accidents, which are mostly caused by track quandaries. That might be an obstacle, a fire detection, or some other fault with the track. So, keeping track of all these difficulties is a time consuming chore for a person. So, we engendered an IoT-predicated Railway Inspection System that includes a sensor-equipped robot car that can identify quandaries on the track which have potential for causing railway accidents, and the sensors utilized to detect this were tilt, ultrasonic, infrared, water, and fire sensors and the movement is controlled using the Relay. In this project we have built the train track security and Monitoring application. In which we monitoring the rails i.e. tracks of trains with an automated robot which we are passing through this track which will detects and inspects the track status like curve and damages etc. and we are controlling this bot remotely so we are getting all these data via an android app this way are monitoring the track in real time with the track fault detection. So with this data we can prevent the remedies like accidents and train sleeping due to those faulty tracks.*

**Keywords:** Railway Track Tracer System, Railway Track Monitoring, Creature Detection, Object Detection, Fire Detection, IoT-based Railway Inspection, Internet of Things (IoT), Railway Safety System, Sensor-Based Monitoring, Ultrasonic Sensor, Infrared (IR) Sensor, Fire Sensor, Tilt Sensor, Water Sensor, Automated Robot Car, Track Fault Detection, Real-Time Monitoring, Railway Accident Prevention, Platform Availability Detection, Android App Control, Remote Monitoring, Track Damage Detection, Obstacle Detection, Curve Detection

