Patent Search

Invention Title	AUTOMATIC RAIL CRACK INSPECTION USING ULTRASONIC SENSORS
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Abstract:

ABSTRACT: Title: AUTOMATIC RAIL CRACK INSPECTION USING ULTRASONIC SENSORS Railways are one of the largest modes of transportation worldwide. However, in reliability and passenger safety, Indian Railways falls short of global standards, necessitating enhanced measures to ensure the safety of passengers and goods trans trains. Track defects are the second leading cause of train accidents, following human error. A recent study has revealed that over 25% of the track length requires re due to the development of cracks. Currently, several rail crack detection systems are in use. The conventional method of rail track inspection involves a cabin inspecti which, though robust, requires human presence. This initiative aims to develop a compact, automated rail track inspection device that eliminates the need for human intervention. The device is designed to move along the rails and detect cracks using ultrasonic sensors. The real-time geographical location of detected cracks is trans nearest railway stations via SMS to the respective authorities using a GSM module. Additionally, the system incorporates obstacle detection on the rail track, enabling and prevent damage when obstacles are detected. Keywords: Rail Crack Detection, Passenger Safety, Ultrasonic Sensors, Automated Inspection.

Complete Specification

Description:DESCRIPTION:
Field of the invention:
The present invention relates to the field of railway safety and maintenance, specifically to systems and devices for automated inspection and monitoring of railway
It focuses on detecting track defects, such as cracks, and identifying obstacles on the track using ultrasonic sensors. The invention integrates real-time communicati
technology, such as GSM modules, to notify railway authorities of detected issues, enabling proactive maintenance and improving the safety and reliability of railwa
transportation systems.
Background of the invention:
Ensuring the safety and reliability of railway transportation is critical for passengers and goods. Track defects, particularly cracks, are a significant contributor to trai
accidents. To address this issue, our project introduces an innovative automated rail track inspection system that eliminates the need for human intervention while
improving efficiency and accuracy.
The system employs a compact vehicle equipped with ultrasonic sensors and a GSM communication module. It is designed to monitor the condition of railway track
real-time, detect cracks, and identify obstacles. The geographical location of any detected cracks is transmitted to the respective authorities via SMS, ensuring timely
This device enhances
railway safety and maintenance procedures, offering a robust and efficient solution to track monitoring and defect management.
Objectives of the invention:

View Application Status

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