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Development of Railway Track Crack Detection Robot

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Abstract: *Railway infrastructure maintenance is crucial for ensuring passenger safety and uninterrupted transportation. This paper presents an innovative IoT-based Railway Track Crack Monitoring System utilizing NodeMcu ESP8266 and proximity sensors integrated into a robot traversing the track. The system employs two proximity sensors to detect cracks along the railway track, transmitting real-time data to the Blynk IoT cloud platform. An LCD display mounted on the robot presents detailed information about the detected track cracks, aiding maintenance personnel in timely intervention. The system is powered by a rechargeable battery, augmented with solar panels for sustainable energy harvesting. This setup ensures continuous operation and minimal maintenance requirements, making it ideal for remote or inaccessible track sections. By leveraging IoT technology and autonomous robotics, the proposed system offers a cost- effective and efficient solution for proactive railway track maintenance, enhancing overall safety and reliability of railway networks.*

Keywords: railway networks

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