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IoT based Railway Track Analysis

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Abstract: *Railway safety is a critical concern, and timely detection of track defects, particularly cracks, is essential for preventing accidents and ensuring operational reliability. This paper presents the design and implementation of an Internet of Things (IoT) based railway track crack detection system. The system integrates advanced sensor technologies, communication protocols, and data processing mechanisms to enable real-time monitoring of railway tracks. The hardware architecture comprises specialized crack detection sensors strategically placed along the railway tracks. These sensors leverage to identify and capture crack-related anomalies accurately. The collected data is transmitted wirelessly through IoT modules to a central processing unit, where sophisticated algorithms analyze and interpret the information.*

Keywords: Railway crack, Arduino nano, GSM, ESP8266, L298N driver, IR sensor, Firebase, Solar panel, Liquid crystal display, Lithium-ion battery

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