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GSM Based Railway Track Crack Detection System

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Abstract: *This paper presents an innovative autonomous Rail- way Track Crack Detection system leveraging the capabilities of Raspberry Pi 5, dual Pi Cameras, a GSM900A module, and an ultrasonic sensor. The system aims to capture high-resolution images of railway tracks, process them using machine learning algorithms to detect cracks, and report any detected faults via GSM communication to the respective authorities. Additionally, the rover features a wheel encoder to measure distance traveled and an ultrasonic sensor for obstacle detection, ensuring reliable operation. The system focuses on real-time communication and precise localization of faults, enhancing overall railway safety and efficiency.*

Keywords: Railway track, crack detection, Raspberry Pi, GSM900A, machine learning, wheel encoder, autonomous rover, MobileNetV2

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