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ADVANCING RAILWAY SAFETY: THE RAILWAY TRACKS CHECKING ROVER

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Abstract: The railway infrastructure maintenance is paramount for ensuring efficient and safe operations across vast distances with minimal human intervention. The Railway Tracks Checking Rover emerges as a pivotal solution designed to traverse railway tracks, identifying faults in rails, sleepers, pads, clips, and detecting unwanted objects along the track. This research introduces a rover equipped with cameras and onboard machine learning algorithms to capture and process real-time video data, swiftly detecting track anomalies. In the event of hazards, pertinent information including video footage, sensor data, and distance from the nearest station is promptly relayed to the control room for swift action. Additionally, night vision flashers and ultrasound distance sensors enhance visibility and measure rail heights, mitigating risks and ensuring optimal track conditions. Utilizing GSM modules and long-range radio transmitters for data transmission, the rover facilitates seamless communication of sensor data and video feeds to the control center, ensuring a timely response to potential threats. The Railway Tracks Checking Rover heralds a new era in railway track maintenance, offering a cost-effective, efficient, and technologically advanced solution. Its implementation promises to bolster railway safety, reduce maintenance expenditures, and enhance the overall reliability of railway infrastructure, thereby optimizing railway operations and ensuring passenger safety.

Keywords: Check; Detect; Rover; Track