

Railway Accident Prevention using Ultrasonic Sensor with Microcontrollers

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Abstract: *Railway Transport is indispensable in modern day life, both for business and private users. Nowadays, rail networks across the world are getting busier with trains travelling at higher speeds and carrying more passengers and heavier axle loads than ever before. The combination of these factors has put considerable pressure on the existing infrastructure, leading to increased demands in inspection and maintenance of rail assets. But nowadays, it is not that much safer as a lot of accidents occur due to improper communication among the network like wrong signalling, worst weather condition, immediate route change, etc., The train driver doesn't get proper information on time and before time so that the hazardous condition can occur. While maritime and air transport are already benefiting from collision avoidance application based on infrastructure less communications. We propose this system to avoid train collision by using Ultrasonic Sensors to provide communication between trains and to avoid same track collisions*

Keywords: Train collision avoidance, Track occupancy detection, Automated signaling system, Ultrasonic proximity sensors, Real-time track monitoring, Railway safety system, Emergency, brake activation, IoT-based railway security, Sensor-based accident prevention Railway automation technologies

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