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Train Collision Avoidance System with Wireless Communication

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Abstract: *In India, human error and negligence are now the main causes of train accidents. The aim of the paper is to eliminate train crashes through the use of surveillance. An automatic surveillance system is fitted in every locomotive. The locomotive's internal surveillance system reads the distinct track numbers that are assigned to each segment of the railway network's train lines. This track number will be shared with neighbouring trains by the surveillance system via radio frequency communication. Subsequently, the system's track number is cross-referenced with the track numbers of adjacent trains. In order to halt the train and avoid accidents, the surveillance system acts to notify the concerned motorman of the same track numbers. A specific technique for numbering train tracks segment by segment is recommended by the study. In order to guarantee data flow between the systems' radio frequency transceivers operating in half duplex mode, a communication protocol is also suggested. Because they can move a lot of people and cargo at once, railways constitute an efficient mode of transportation. At either end of the branch track, Wireless Monitoring Units (WMUs), also known as nodes, are placed to allow for the detection of train arrival and departure times for that particular branch*

Keywords: Railway Line, Tracking System, Position Information, Ultrasonic Sensor, Wireless Sensor Networks, NRF2401