

Smart Solutions For Railways

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LITERATURE SURVEY

G. Leena and Chetan Singh , “International Journal of Computer Applications” published on web source 2017. In order to reduce accidents at unmanned railway gates, the goal of this study is to automate numerous procedures connected to the opening and closing of railway gates. Using GSM technology, this automatic system notifies the station master of the train's location and recognizes the individual who is excessively yanking the chains. Additionally, it detects track breakages and unwelcome impediments using an anti-collision technology. Since it will recognize the coming of the train and close the gate as necessary, this automatic railway system decreases the amount of time that road users must wait at railway crossings.

Sushant M. Gajbhiye and Raju A. Bondre , “International Journal of Engineering and Technical Research V9(02)” published on web source 2020 . The main objective of this research article is to reduce the frequency of railroad accidents that occur at level crossings (Intersection Points). The railway system is the most widely used and least expensive mode of transportation in India. Because there are more people using the rails and it is challenging to stop the railroad anywhere to prevent an accident, this has substantial drawbacks. Level crossings currently operate on an unmanned basis, which leads to a lot of accidents because no one is present to check that the railway gate opens when a train approaches the crossing.

Nikola Besinovic , published in websource 2020. Critical infrastructure networks, like the transportation and power grids, are necessary for a society's and an economy's smooth operation. Rail networks grow more congested as a result of rising transportation demand, which makes them more interconnected and difficult to operate. In the future, it is also possible to anticipate an increase in the number of interruptions brought on by system failures and climate change. Because of the frequent cancellations and significant delays, many passengers are unable to reach their destinations, which limits their need for mobility. The requirement to quantify disruptive effects and system performance evolution is currently growing. The goal of this review article is to establish a field-specific definition of resilience in railway transportation.

Rohan Kalaskar and Omkar Shete , “3rd International Conference on Advances in Science & Technology (ICAST) ” published on web source 2020. The trains are the most popular form of transportation in an overcrowded metropolis like Mumbai, but on the other hand, accidents on railroad tracks have constantly increased in number. According to a recent assessment, accidents involving suburban trains have resulted in numerous fatalities and serious injuries throughout the years. The proposed project will support goals including collision avoidance, in which automatic brakes are applied after an object is detected on a railway track, in order to increase the safety of Indian railways. A crowd control system has also been installed in order to provide the finest amenities to travelers by train.

Ramy Elsayed Shaltout and Cristian Ulianov Published in web source on July 2018. The development of new, highly effective systems that may be successfully used for a variety of applications and ensuing functions related to railroad operations, including safety and security concerns, has been made possible by recent advancements in numerous types of technologies. Real-time monitoring, tracking, and tracing capabilities for rail vehicles can increase the overall rail system's dependability and offer more synchronized traffic for passenger and freight trains. By making it possible to utilize the acquired data in real time, these would also help to increase interoperability. Additionally, in regard to the establishment of a GNSS system for security purposes, prior initiatives and current rail research are studied alongside the possible advantages of GNSS applications in the rail industry.

Marwa M. Eid and M. I. Fath Allah , “International Conference On Communication Control And Computing Technologies ” published on web source 2010. Trains are now the main mode of travel between many nations, displacing other modes of transportation. However, incidents involving railroads can also be more dangerous in terms of property damage and fatalities. More work is therefore required to increase security in common railway security systems. Additionally, manually watching the tracks is actually unreliable and impractical. Therefore, the goal of this paper is to establish an automated railway security prototype model using cutting-edge electronic circuits, a communication module, and the suggested mobile interfaces to prevent collisions and enable better communication between trains, central control headquarters, and passengers. It is built on an embedded Arduino UNO platform to introduce

Lorenzo De Donato and Ruifan Tanga Published in web source on April 2022. Nowadays, it is generally acknowledged that artificial intelligence (AI) has a substantial impact on a variety of industries, including the railroad industry. We give a thorough literature assessment of the state-of-the-art of AI in railroad transportation in this article. We specifically looked at papers from a comprehensive railroad viewpoint and discussed them, spanning sub-domains such maintenance and inspection, planning and management, safety and security, autonomous driving and control, revenue management, transportation policy, and passenger mobility. By giving a description of current AI research foci relevant to rail transportation, this paper makes a first step toward defining the role of AI in future railways. We looked at 139 scientific papers that were published between 2010 and 2020.

Ishan Mishra Published in web source on “April 2020”. In terms of travel, the railroad is the most affordable and convenient form of transportation in our nation. Many individuals in India utilize trains to travel to different locations, and some use Indian Railways on a daily basis. As a result, a lot of people entrust the railroads with their lives on a regular basis, putting their lives in danger if they are unsafe or prone to accidents. The level crossing where the railroad tracks and the road converge is the site of many railroad accidents, most of which are caused by human error.

Fernando Boavida Published in web source on “Feb 2020”. Given that today's railway systems must adhere to stringent efficiency, cost-effectiveness, and safety standards, maintenance of the rails is essential to their continued functioning. Scalability and service quality. Current options for maintaining railroads include, In the past, either reactive or periodic, which is not ideal. Moreover, They frequently employ pricey, sophisticated methods and do not capitalize on opportunities. Many new technological innovations, including 5G technologies, cloud-based information extraction and inference, intelligent data processing, and operation in order to achieve preventive maintenance. Predictive maintenance is actually the core tenet of what is today referred to as Smart Railway Maintenance. It's a pa-by outlining current practices, per offers insight on smart railway maintenance. Methods for railroad maintenance systems, highlighting their shortcomings with providing technology with consideration for the most recent requirements

Masharul Bin Mahfuz Published in web source on “2018”. In order to avoid risks like crashes and derailments, this study proposes a method for an intelligent and automatic management of a railway transportation system. The system was created with Bangladesh in mind, but it may also be simply applied to any other railway infrastructure. The system includes automatic signaling and gate control at level crossings using light emitting diodes (LEDs) and servo motors, active train detection using global positioning satellite system (GNSS) coordinates, obstacle detection at level crossings using long-range infrared, automatic and manual communication between trains and level crossings using GSM technology, and development of a web-based central control system.