

LITERATURE SURVEY

Date	
Team ID	PNT 2022TMID41339
Project Name	Smart Solution For Railway

ABSTRACT

Even with greatest of ideas to avoid railway accidents, many train accidents still happen worldwide. This paper shares an idea on how to avoid train collision by using an automated control incorporated in the trains. In this proposed paper we have implemented ideas such as pre-crashing using RFID sensor, ultrasonic sensor in-order to choose an array of commands which would run as per the conditional algorithm created in the microcontroller. We would also have EMP control the speed of the motor to lessen speed. This system will be more efficient since it was fully automated and also it was cost effective.

EURO ASIAN RAILWAY POLICE AND TRENDS

- Railways as a key element of sustainable economics
- National and international connectivity as a resource
- Active shift to rail sustainable technologies new financing tools Data – As-An-Asset
- Physical reliability Non-physical reliability multimodality customer experience.

SMART RAILWAY SOLUTIONS AS TOOLS TO REACH STRATEGIC GOALS

STRATEGIC PRIORITIES SOLUTIONS

RELEVANT SMART

RAILWAY NETWORK DEVELOPMENT	establishment of traffic control system with basic digitalization basic interoperability and smart solutions for border crossings use of funding tools aimed primarily at financing construction and network upgrade use of transportation modelling to understand the necessity for further developments
INTERNATIONAL RAIL LINKS	e-interoperability legislative work to assure internal harmonization of solutions use of smart form of railway-customs interfaces use of freight flows modelling to adjust the capacities of border infrastructure
SHIFT TO RAIL OFFICIAL INITIATIVES	all spectrum of smart railway solutions can be used as a part of modal shift policy
SUSTAINABILITY	intensive digitalization, automation, e-interoperability technologies for predictive maintenance smart technologies for international carriage (for all issues from maintenance to operations) use of new types of financing tools (like bonds, venture investment funds, etc.).
ADVANCED DIGITALIZATION AND AUTOMATION	artificial intelligence and machine learning data integration and data-as-an-asset approach data sharing and use of new distributed data technologies like blockchain

References

- [1] S. Sawadisavi J. Edwards, E. Resend, J. Hart,C. Barkan, and N. Ahuja,“Development of amachine vision system for inspection of railroadtrack,” in Proc. Amer. RailwayEng.MaintenanceWay Assoc. Annu. 2012
- [2]. M. Singh, S. Singh, J. Jaiswal, and J.Hempshall, “Autonomous railtrack inspectionusing vision based system,” in Proc. IEEE Int.Conf. Comput.Intell. Homeland Secur. Pers.Safety, 2009
- [3]. J. Lin, S. Luo, Q. Li, H. Zhang, and S. Ren, “Real-time rail head surfacedefect detection: Ageometrical approach,” in Proc. IEEE Int.SympIndust. Electron., 2009.
- [4]. R. Clark, S. Singh, and C. Haist, “Ultrasonic characterisation of defects in rails,” Insight, vol.44, no. 6, pp. 341–347, 2002
- [5]. R. Edwards, S. Dixon, and X. Jian,“Characterisation of defects in the railhead using ultrasonic surface waves,” NDT & E Int., vol. 39,no. 6, pp. 468–475, 2006.

Conclusion

By using this Autonomous vehicle for purpose of railway track inspection and crack detection, it will have a great impact in the maintenance of the tracks which will help in preventing train accidents to a very large extent. The regions where manual inspection is not possible, like in deep coal mines, mountain regions and dense thick forest regions can be easily done using this vehicle. By using this vehicle for the purpose of Railway track inspection and crack detection and automated SMS will be sent to pre-defined phone number whenever the vehicle sensors detect any crack or deformation. This will help in maintenance and monitoring the condition of railway tracks without any errors and thereby maintaining the tracks in good condition, preventing train accidents to very large extent Railway track crack detection autonomous vehicle is designed in such a way that it detects the cracks or deformities on the track which when rectified in time will reduce train accidents.