

# Railway Track Crack/Obstacle Detection System using IR Sensor

Prof. R. K. Nanwatkar<sup>1</sup>, Mr. Adesh Sonawane<sup>2</sup>, Mr. Mayuresh Vaidya<sup>3</sup>, Mr. Rahul Shah<sup>4</sup>,  
Mr. Bhavesh Sonawane<sup>5</sup>

Assistant Professor, Mechanical Engineering, NBNSSOE, Pune, India<sup>1</sup>

UG Student, Mechanical Engineering, NBNSSOE, Pune, India<sup>2,3,4,5</sup>

**Abstract:** In the fast-developing country, people are facing many accidents; it would be undesirable for any nation to lose their life for an unwanted cause. Railways are one of the important transports in India. There is a need for manual checking to detect the crack on railway track and railway personnel always take care of this issue, even though the inspection is made regularly. Sometimes the crack may go unnoticed. Because of this the train accident or derailment may occur. In order to avoid this situation and automate the railway crack detection has been proposed. Here IR sensor is used to detect the crack in the railway track and detect the obstacle presence in the track, here we are Using Arduino microcontroller. This project pertains to a process for monitoring the condition of rail on train tracks and more specifically has the object of the identification of defects detected by IR sensors on the tracks to be checked to allow maintenance crews to subsequently find these defects. The 3 D model will be drawn with the help of CATIA software. All the components will be manufactured and then assembled together. After making the assembly, the experimental testing will be carried out. After the testing, the result and conclusion will be carried out.

**Keywords:** Arduino microcontroller, IR sensor, CATIA software, GSM module, AVR Controller, D.C. Motor, etc.

## REFERENCES

- [1] Mansi S. Chabukswar<sup>1</sup>, Ravikant K. Nanwatkar<sup>2</sup>, in International Journal of Research in Engineering, Science and Management volume 2, issue 12 published 2019/12
- [2] Pravinram R, Prasath R, Nanda Gopal R, Hari babu S. "Railway Track Crack Detecting Robot using IR and GSM" SSRG International Journal of Electronics and Communication Engineering, volume-1, Issue-4, June 2014 (21-23)
- [3] Parag Nikhar, Rakesh Pise, Avinash Shelar, "IR Sensor Based Crack Detection of Railway Track Using GSM & GPS System", Journal of App. Phy., 2009.
- [4] D.Naresh Kumar, M.Uday, G. Brahmini, A.Mounika Reddy, M.Sagar Kumar, "Railway Track Crack Detecting System", PIERS ONLINE, Vol. 6, NO. 3, 2010.
- [5] Sajan Thomas, Suhaib M V, Saran Kumar S, Vignesh T, T. Vandarkuzhali, "Design and Fabrication of Automatic Railway Track Crack Detection System".
- [6] P.V.V.N.D.P.Sunil, Y.N.V.V.LPrasanna, M.L.Prasanna, P.Sravani Gayathri, "Detecting Cracks and Obstacles in Railway Tracks", IEEE Sponsored 2nd International Conference on Innovations in Information Embedded and Communication Systems. vol. 3, iss. 6, pg. 413-413 December 2015.
- [7] Richard J. Greene, John R. Yates and Eann A. Patterson, "Crack detection in rail using infrared methods," Opt. Eng. 46, 051013, May 2007
- [8] R. T. Lemmon, the influence of the number of satellites on the accuracy of RTK GPS positions, Australian Surv., vol. 44, no. 1, pp. 64-70, 1999.
- [9] Selvamraju Somalraju, Vigneshwar Murali, Gourav Saha, Dr.V.Vaidehi, "Robust Railway Crack Detection

Scheme (RRCDS) Using LED and LDR

- [10] Hartman, G.A., "Infrared Damage Detection System (IDDS) for real time, small-scale damage monitoring, Charlotte, North Carolina (2003).
- [11] Wojnarowski, Robert John Welles, Kenneth Brakeley Kornrumpf, and William Paul, "Electromagnetic system for railroad track crack detection and traction enhancement".