

A

MINI PROJECT REPORT ON

Assessing Pavement Roughness with Mobile Accelerometer Sensors

Submitted by

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CERTIFICATE

It is certified that the Mini project report entitled "**Assessing Pavement Roughness with Mobile Accelerometer Sensors**" submitted by Tarun Kumar, Piyush Keshri, LikhaTai, and Manish Kumar Ratre of B. Tech 4th Semester, in partial fulfilment of the requirements of the award of degree of Bachelor of Technology in Civil Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya, Bilaspur is accorded to the student's own work, carried out by them in the Department of Civil Engineering during session 2023-24 under my supervision and guidance.

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ABSTRACT

Pavement condition monitoring plays a pivotal role in ensuring a comfortable travel experience for road users. Condition assessment of pavement has a predominant part in delivering safety and comfort to users. Roughness is one of the significant road conditions as it directly affects the safety of the users as well as the vehicle costs. Road roughness is generally measured using expensive or time-consuming instruments like roughometer, and MERLIN. Presently, concerned authorities expend a tremendous amount of time, finance, and labor by employing conventional roughness measurement methods. The present work discusses a low-cost and easy method using smartphone sensors for road roughness measurement. Smartphone is fixed on the dashboard of a vehicle to collect the vertical vibrations caused when it is driven over the pavement. The results were statistically compared with IRI-values captured using Roughometer.

Key words: pavement, roughness, smartphone, accelerometer, effect of vehicle speed, recommended speed range.