

A Project Report on

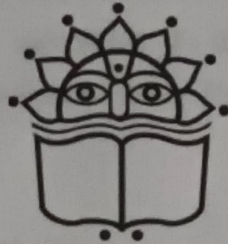
Smart Helmet With Alcohol Detection

By

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Guided by,

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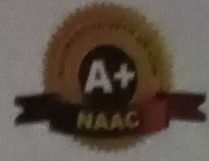
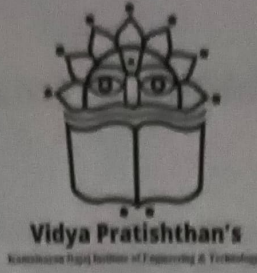
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Baramati -413133 (India)

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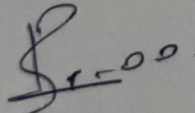


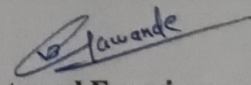
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CERTIFICATE

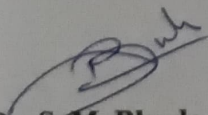
This is to certify that project titled "Smart Helmet With Alcohol Detection" submitted by *Mr. Kulkarni Shripad Gajendra, Mr. Panchal Anteshwar Gurunath, Mr. Waghmare Swapnil Devidas, Mr. Walande Sadanand Ravishankar*, in partial fulfillment for the award of Bachelor of Mechanical Engineering of Savitribai Phule Pune University (S.P.P.U) at Vidya Pratishthan's Kamalnayan Bajaj Institute of Engineering and Technology, Baramati, is a record of original research work carried out under my supervision. To the best of our knowledge, the matter embodied in the thesis has not been submitted to any University/Institute for the award of any Degree.

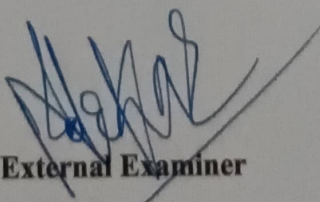
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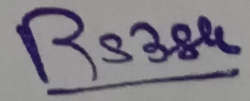
Place: Baramati


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External Examiner


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ACKNOWLEDGMENTS

We would like to express our heartfelt gratitude to all the individuals and organizations who have contributed to the development and realization of the concept of the smart helmet with alcohol detection. Their support, guidance, and assistance have been invaluable throughout this endeavor.

First and foremost, we would like to thank our project guide, **Prof. D.D. Rupanwar**, for their unwavering support, expertise, and guidance. Their insightful feedback, constructive criticism, and constant encouragement have been instrumental in shaping the direction of this project.

We would also like to extend our appreciation to the Project Coordinator **Mr. V.B. Gawande** and Head of Department, **Dr. S. M. Bhosle** and Principal **Dr. R.S. Bichkar** for their collective efforts in conducting extensive research, reviewing relevant literature, and providing technical insights have significantly contributed to the development of this project. Their commitment and dedication have been truly inspiring.

We are grateful to the participants and volunteers who have generously contributed their time and expertise in the testing and validation phase of the smart helmet with alcohol detection system. Their involvement and feedback have allowed us to refine and improve the system's performance and usability.

Thank you.

Mr. Waghmare Swapnil Devidas

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Mr. Walande Sadanand Ravishankar

Mr. Panchal Anteshwar Gurunath

ABSTRACT

Drunk driving remains a critical issue contributing to road accidents and jeopardizing public safety. To address this problem, this abstract explores the concept and implementation of a smart helmet integrated with alcohol detection technology. By incorporating alcohol detection sensors into a helmet, the aim is to prevent accidents caused by impaired motor skills and impaired judgment due to alcohol consumption. The working principles of the smart helmet involve sensor calibration, signal processing, and alcohol detection algorithms. Calibration ensures accurate readings from the alcohol detection sensors, which measure the concentration of alcohol in the vicinity of the helmet. The collected data undergoes signal processing and analysis, followed by the application of detection algorithms to determine the user's alcohol level. If the alcohol level exceeds a predefined threshold, the user is alerted through user-friendly interfaces, such as visual or audio signals.

Implementing a smart helmet with alcohol detection poses several benefits. Firstly, it provides an added layer of safety by detecting alcohol impairment before the user operates a vehicle, potentially preventing accidents. Secondly, it promotes responsible behavior by raising awareness about the dangers of drunk driving. Moreover, the integration of alcohol detection technology with a helmet ensures a convenient and non-intrusive monitoring system. However, there are challenges to consider. Sensor calibration and accuracy are critical factors in ensuring reliable readings. Signal processing techniques must be robust to filter out noise and provide precise alcohol level analysis. Additionally, user acceptance, privacy concerns, and legal implications need to be addressed to ensure widespread adoption and compliance. The implementation and integration of the smart helmet with alcohol detection require careful consideration. Design considerations involve the ergonomic integration of alcohol detection sensors without compromising helmet functionality. Integration with existing helmet technologies, such as communication systems or heads-up displays, enhances the overall user experience. The human-machine interface must be intuitive and informative to effectively communicate alcohol detection results to the user. Testing and performance evaluation are vital to ensure the reliability and effectiveness of the smart helmet. Test scenarios and methodologies should simulate real-world conditions to evaluate its performance accurately. Metrics such as detection accuracy, response time, and false-positive rates are used to assess the system's performance. Real-world testing and validation are essential to validate its effectiveness under different environmental conditions and user scenarios.

Keywords: Alcohol sensor, Infrared Object Detection Sensor, Buzzer Module, Magnetic sensor, GSM system, Arduino Uno, Battery or power units, Transmitter system, Fuel level indicator, Limit switch.