# VISVESVARAYA TECHNOLOGICAL UNIVERSITY

“JnanaSangama”, Belagavi-18, Karnataka, India



**MINI PROJECT REPORT-19MD6DCMPR**

*on*

“PROTECTIVE HEAD GEAR FOR MINE WORKERS”

***Submitted in partial fulfillment of the requirement for the degree of***

## BACHELOR OF ENGINEERING

*in*

## MEDICAL ELECTRONICS ENGINEERING

**During academic year 2022 –2023**

*by*

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*Under the guidance of* **Prof.Srinivas Halvi Assistant Professor**



**Department of Medical Electronics Engineering**

**Accredited by National Board of Accreditation (NBA)**

# DAYANANDASAGAR COLLEGE OF ENGINEERING

Shavige Malleshwara Hills, Kumaraswamy Layout, Bangalore-560078

An Autonomous Institute affiliated to VTU, Approved by AICTE and UGC, Accredited by NAAC with ‘A’Grade&ISO9001:2015 Certified Institution

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## DEPARTMENT OF MEDICAL ELECTRONICS ENGINEERING

*Accredited by National Board of Accreditation (NBA)*

**CERTIFICATE**

This is to certify that the Mini-Project titled “**PROTECTIVE HEADGEAR FOR MINE WORKERS**” is a bonafide work carried out by AHMED YOUNUS A.N, CHAITHRA B.P, ROHAN.S, SYED UMAR FAROOQ bearing USN (1DS20MD004,1DS20MD009,1DS20MD032,1DS20MD040) respectively

of VI semesters, Department of Medical Electronics Engineering, DSCE an autonomous institute affiliated to **Visvesvaraya Technological University** and partial fulfilment for the Degree of **Bachelor of Engineering** during the year 2022-23. This certified that all the suggestion indicated has been incorporated**.** The mini-project report has been approved as it satisfies the academic requirements prescribed for the above-said degree.

|  |  |  |
| --- | --- | --- |
| Signature of Guide | Signature of Mini Project  Coordinator | Signature of HoD |
| **Prof.Srinivas Halvi** | **Dr Krishnan Bandyopadhyay** | **Dr. A.R. Aswatha** |
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## DECLARATION

We, Ahmed younus A.N, Chaithra B.P Rohan.S, Syed Umar Farooq, hereby declare that this mini-project entitled **“PROTECTIVE HEAD GEAR FOR MINE WORKERS”** embodies report of our mini-project work carried out under the guidance of **Prof.Srinivas Halvi,** assistant professor, Department of Medical Electronics Engineering, Dayananda Sagar College of Engineering, Bangalore.

This mini-project report is submitted to **Visvesvaraya Technological University, Belagavi, Karnataka,** in partial fulfillment of requirements for the award of degree **Bachelor of Engineering** in **Medical Electronics Engineering** during the academic year **2022-23**. Further, the matter embodied in the mini-project report has not been submitted previously by anybody for the award of degree or diploma to any other University.

Place– Bangalore Date:

Student name (USN)

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**ABSTRACT**

This paper introduces a cutting-edge smart head gear system designed specifically for underground mine workers. The system integrates advanced features, including gesture recognition, temperature monitoring, humidity sensing, and gas detection capabilities, to ensure optimal safety, health, and productivity in the challenging mining environment. The smart head gear utilizes a sophisticated array of sensors, such as inertial sensors, temperature sensors, humidity sensors, and gas sensors, to capture and analyze real-time data. The gesture recognition functionality allows for hands-free control of the head gear's features, minimizing distractions and improving worker focus. The temperature monitoring feature enables continuous tracking of ambient and body temperature, facilitating early detection of heat stress and thermal discomfort. The humidity sensing capability provides insights into environmental moisture levels, optimizing ventilation and improving worker comfort. Additionally, the gas detection functionality alerts miners to the presence of hazardous gases, enhancing safety and preventing accidents. By seamlessly integrating these features, the smart head gear system offers a comprehensive solution to enhance safety, productivity, and well-being for underground mine workers.

**Keywords**: Smart head gear, Gesture recognition, Temperature monitoring, Humidity sensing, Gas detection, Underground mining, Worker safety, Productivity, Heat stress, Thermal discomfort, Environmental monitoring.

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