

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**"Jnana Sangama" Belagavi – 590 018**



**PROJECT REPORT ON**

**“WIRELESS SENSOR NETWORK BASED  
LANDSLIDE DETECTION”**

**Submitted in partial fulfillment of the requirements for the award of degree**

**BACHELOR OF ENGINEERING  
IN  
ELECTRONICS & COMMUNICATION ENGINEERING**

**Submitted By**

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**Under the Guidance of  
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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING  
ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY**

**Accredited by NAAC with A+ Grade & NBA**

**MOODBIDRI – 574 225.**

**2022-2023**

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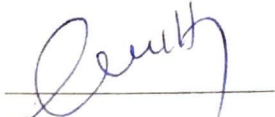
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

## CERTIFICATE

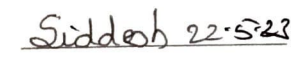
Certified that the project work entitled "**WIRELESS SENSOR NETWORK BASED LANDSLIDE DETECTION**" is a bona fide work carried out by:-

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in partial fulfillment for the award of BACHELOR OF ENGINEERING in **ELECTRONICS & COMMUNICATION ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2022-2023. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

  
Signature of the Guide

Dr. Roshan Shetty

  
Signature of the H.O.D

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Signature of the Principal  
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Siddesh 24/5/23  
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## ABSTRACT

Landslides are a natural disaster that can cause significant damage to infrastructure and pose a threat to human life. Early detection and timely warning systems are crucial for minimizing the impact of landslides. Wireless Sensor Networks (WSNs) have emerged as a promising technology for landslide detection due to their ability to monitor remote and hazardous areas with high accuracy and efficiency. This abstract presents a wireless sensor network-based approach for landslide detection. The proposed system consists of a network of spatially distributed sensors deployed in landslide-prone areas. These sensors are equipped with various sensing capabilities, including accelerometer, tilt, strain, and weather sensors, to monitor the key parameters associated with landslide occurrence. The sensor nodes are interconnected through wireless communication links, forming a self-organizing and ad-hoc network. They continuously collect data from their surroundings and transmit it to a central monitoring station.

The monitoring station is responsible for processing and analysing the received data to identify potential landslide events. To enable efficient and accurate landslide detection, advanced data processing techniques such as data fusion, pattern recognition, and machine learning algorithms are employed. These techniques allow the system to detect anomalies, identify precursory signs of landslides, and differentiate between normal environmental variations and potential landslide indicators. Upon detecting a potential landslide event, the system triggers immediate alerts to the designated authorities and stakeholders, enabling them to take necessary actions to mitigate the risks. The alerts can be transmitted through various means, including SMS, email, or automated phone calls. The proposed wireless sensor network-based landslide detection system offers several advantages over traditional monitoring methods. It provides real-time monitoring, continuous data collection, and early warning capabilities, enabling rapid response and reducing the impact of landslides. Furthermore, the wireless nature of the sensor network eliminates the need for extensive wired infrastructure, making it cost-effective and easy to deploy in remote or inaccessible areas.