VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 018

PROJECT REPORT ON

"HYBRID SURVEILLANCE ROBOT USING ROCKER BOGIE MECHANISM"

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

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

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CERTIFICATE

*Certified that the project work entitled "***HYBRID SURVEILLANCE ROBOT USING ROCKER BOGIE MECHANISM***" 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 2023–2024. 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.

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ABSTRACT

Surveillance in challenging terrains, such as rough terrain, urban environments, or disaster-stricken areas, demands versatile and robust robotic platforms. This paper proposes a novel approach to address this challenge through the design and implementation of a Hybrid Surveillance Robot (HSR) utilizing the Rocker Bogie Mechanism (RBM). The RBM, known for its ability to traverse uneven terrain while maintaining stability, serves as the core locomotion system for the HSR. The robot integrates both wheeled and legged locomotion modes, enabling it to adapt to various terrain types seamlessly. The design of the HSR incorporates a modular architecture, facilitating customization for specific surveillance tasks and easy maintenance. The robot is equipped with a suite of sensors, including cameras, LiDAR, and infrared sensors, enabling it to perceive its surroundings comprehensively. A centralized control system coordinates sensor data fusion, navigation, and decision-making processes.Key features of the proposed HSR include its ability to navigate over obstacles, climb stairs, and traverse rough terrain with high stability and agility. The hybrid locomotion system ensures efficient movement in diverse environments, enhancing the robot's operational capabilities. Furthermore, the robot's compact size and low profile enable it to access confined spaces and maneuver through cluttered environments effectively. Experimental results demonstrate the effectiveness of the HSR in various surveillance scenarios, showcasing its capability to operate autonomously in real-world environments. The proposed hybrid surveillance robot presents a promising solution for enhancing surveillance capabilities in challenging terrains, offering versatility, robustness, and adaptability for a wide range of applications.