# VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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## MINI PROJECT REPORT

## OF

# AUTONOMOUS ARDUINO ROVER


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# ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

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### DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

# CERTIFICATE

*Certified that the mini project work entitled* ***"AUTONOMOUS ARDUINO ROVER"*** *is a bonafide workcarried out by*

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in partial fulfilment for the award of **BACHELOR OF ENGINEERING** in **INFORMATION SCIENCE AND ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM** 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.

**Mr. JAYANTHKUMAR RATHOD**
**Project Guide**

**Dr. SUDHEER SHETTY**
**Head of Department**

# ABSTRACT

The Autonomous Obstacle Avoidance Rover using Arduino represents a groundbreaking advancement in robotics and autonomous systems. This project harnesses the power of Arduino microcontrollers, integrated with an array of sensors, to create a versatile rover capable of navigating complex environments while avoiding collisions.

The core of the rover's functionality lies in a sophisticated sensor suite, including ultrasonic sensors for proximity detection, infrared sensors for obstacle identification, and an encoder system for precise distance measurement. These sensors work in tandem to provide comprehensive environmental awareness, enabling the rover to make informed decisions in real-time.

Key to the success of this project is the integration of advanced algorithms for sensor data processing and decision-making. The Arduino microcontroller employs custom-written code to interpret sensor inputs, identify obstacles, and calculate optimal navigation paths. By utilizing a combination of ultrasonic, infrared, and encoder data, the rover can dynamically adjust its course to steer clear of obstacles, ensuring safe traversal through diverse terrains.

Furthermore, the system's autonomy is augmented by a set of motor control mechanisms, which enable the rover to execute precise movements dictated by the decision-making algorithms. This seamless coordination between sensors, processing algorithms, and actuators showcases the system's efficiency and responsiveness in navigating complex environments.

The implementation of this autonomous obstacle avoidance rover holds promise for a wide range of applications, from indoor environments to outdoor terrains. Its adaptability and reliability make it a valuable tool in scenarios where autonomous navigation with obstacle avoidance is paramount. This project not only demonstrates the capabilities of Arduino microcontrollers but also paves the way for future advancements in robotics and autonomous systems.