

# **AUTONOMOUS DRONE**

Project report submitted

In partial fulfilment of the requirements of the degree of

**Bachelor of Technology**

in

**ELECTRONICS & COMMUNICATION ENGINEERING**

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**JUNE 2022**

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## CERTIFICATE

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It is certified that the work contained in the project report titled "**AUTONOMOUS DRONE**"  
by the following students:

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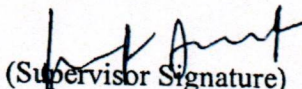
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## DECLARATION

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I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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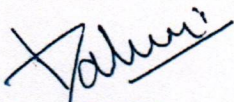


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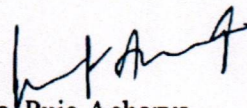
## APPROVAL SHEET

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This project report entitled **AUTONOMOUS DRONE** by **RAHUL K ANIL, DIWAKAR BAGHEL & LAKSHAY PRASAD NIMWAL** is approved for the degree of **B. Tech Electronics & Communication**, School of Engineering and Technology.

  
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At the end I would like to express my sincere thanks to all my friends and others who helped me directly or indirectly during this project work.

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## ABSTRACT

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The evolving area of intelligent unmanned aerial vehicle (UAV) research has shown rapid development in recent years and proposals a great number of research challenges for artificial intelligence and knowledge representation. Much previous research has focused on low-level control capability with the goal of developing controllers which support the autonomous flight of a autonomous drones from one waypoint to another. The most common type of mission scenario involves placing sensor payloads in position for data collection tasks where the data is eventually processed off-line or in real-time by ground personnel. Use of autonomous drones and mission tasks such as these have become increasingly more important in recent conflict situations and are predicted to play increasingly more important roles in any future conflicts.

Intelligent autonomous drones will play an equally important role in civil applications. For both military and civil applications, there is a desire to develop more sophisticated autonomous drones' platforms where the emphasis is placed on development of intelligent capabilities and on abilities to interact with human operators and additional robotic platforms. The research has moved from low-level control towards a combination of low-level and decision-level control integrated in sophisticated software architectures. These in turn, should also integrate well with larger network centric based C4 systems. Such platforms are a prerequisite for supporting the capabilities required for the increasingly more complex mission tasks on the horizon and an ideal testbed for the development and integration of distributed AI technologies.



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## **LIST OF ABBREVIATIONS**

GND	Ground
UAV	Unmanned Surveillance Vehicle
I/O	Input – Output
TX	Transmitter
RX	Receiver
LCD	Liquid Crystal Display
EEPROM	Electrically Erasable Programmable Read Only Memory
USB	Universal Serial Bus
LED	Light Emitting Diode
IDE	Integrated Development Environment
UART	Universal Asynchronous Receiver Transmitter
mAh	Milliampere-hour



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**1. Introduction**

In today's developing world of technology, the impact autonomous drones have created on the human life has been extraordinary. Autonomous drones have become smart and autonomous which paves way to incorporate the same into aerial and space vehicles too. Drones are relatively small sized flying vehicles that can cater to numerous humans as well as the needs of the ecosystem. Autonomous drones are a boon to humans. They are capable of navigating on their own without any user input. Machine learning and artificial intelligence play a key role in the structure of an autonomous drone design. In this research work the primary focus is about the implementation of a quad copter in the Line of Control (LOC) for defence machinery maintenance and surveillance. To increase the level of data security and backup security during times of calamity or attack from the enemies an auxiliary drone is programmed to eject automatically and render the data captured to the base station. The drone is designed to navigate around with four brushless motors and a carbon fiber frame for stability and robust structure. Autonomous drones or Unmanned aerial vehicles (UAVs) have become an integral part of modern warfare. They are of low cost and risk to the users. In recent times, the abilities of an UAV have been extended to be on par with those of manned fighter aircrafts. But even now, most UAVs are still used for camera and video filming purposes. Moreover, autonomous drones that can remain abode for extended periods have been developed. This would be almost impossible to design for traditional aircrafts. Autonomy in controlling these autonomous drones is a good way of reducing cost and yet maintaining the quality of human judgment as the

**1.1 Project Description**

As we know, when there is any natural disaster like land slide, forest fire, tsunami, glacier breakdown, earthquake and some unnatural disaster like bomb explosion and construction sites which are developed by humans. In some cases, like land slide, glacier breakdown, sudden building destruction etc. Around 33 people die daily because of trap under the debris but we can rescue them by sensing their body heat by using a sensitive thermal sensor on a drone.