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# War Field Robotic Vehicle

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**ABSTRACT:**The main objective behind developing this robot is for the surveillance of human activities in the war field or border regions in order to reduce infiltrations from the enemy side. The robot consists of night vision wireless camera which can transmit videos of the war field in order to prevent any damage and loss to human life. Military people have a huge risk on their lives while entering an unknown territory. The robot will serve as an appropriate machine for the defence sector to reduce the loss of human life and will also prevent illegal activities. It will help all the military people and armed forces to know the condition of the territory before entering it. The war field robot consists of Arduino uno board as a controller board. It has L293D motor driver IC's along with a HC-05 Bluetooth module. Two DC motors are also used for the motion of the robot. The night vision wireless camera is attached with the robot in order to monitor the situation and the camera can be rotated 360 degrees via the android application through motor. The Sydney siege is considered one of the historic movements in the field of automation and robotics

**KEYWORDS :**Robot, Night Vision, Bluetooth Module, Android.

## I.INTRODUCTION

As we might have seen in the news or read in the newspaper about the ongoing tension among India and China at LAC in Galvan valley and also with Pakistan in J&K lands. As a youth, we thought of helping our soldiers who are fighting for our safety and well-being by staying on guard for 24hrs not only by risking their lives but also by staying away from their families for months. we came up with an idea to help our soldiers by building a war-based spying robot to help them, spy, not only on enemy's movements but also their armories by providing the intel to our soldiers on war field by gaining not only some time to work on counter strategies but also to know the condition of the territory before entering. inaccessible to humans without getting spotted but also its ability to see in the night without getting much attention by using its night vision camera installed on the robot. This technology is used for serial communication with the robot. It is used to share data between 2 devices considering the range between devices. The Bluetooth module HC-05 will be connected with the robot and the commands are given to the robot by the android application. The war field robot consists of Arduino uno board as a controller board. It has L293D motor driver IC's along with a HC-05 Bluetooth module. Two DC motors are also used for the motion of the robot. The night vision wireless camera is attached with the robot in order to monitor the situation and the camera can be rotated 360 degrees via the android application through motor. The Sydney siege is considered one of the historic movement in the field of automation and robotics

## II.OBJECTIVE

An objective war field robotic vehicle is a highly advanced, autonomous machine designed for military operations on the battlefield. Its primary purpose is to support troops and enhance their capabilities in combat scenarios. These robotic vehicles are equipped with various sensors, weapons, and communication systems, allowing them to perform a wide range of tasks. Reconnaissance: These vehicles are equipped with advanced sensors and cameras that can gather critical intelligence about enemy positions, terrain, and potential threats. They can operate in hazardous environments and relay real-time information to human operators. Firepower and Engagement: Objective war field robotic vehicles are armed with weapons systems such as machine guns, anti-tank missiles, or even artillery. They can engage hostile targets effectively, reducing the risk to human soldiers and providing firepower support on the battlefield. Force Multiplier: These robotic vehicles are designed to work alongside human troops, acting as force multipliers by increasing their effectiveness and reach. They can provide additional firepower, logistical support, and situational awareness, improving overall mission success rates. Logistics and Resupply: Robotic vehicles can transport supplies, ammunition, and equipment to soldiers on the frontlines, reducing the burden on human personnel. They can navigate through challenging terrains and deliver essential resources to sustain military operations. Mine Clearing and EOD: Objective war field robotic vehicles are often equipped with specialized tools and systems for mine clearing and explosive ordnance disposal (EOD) operations. They can safely detect and neutralize explosive threats, protecting



human lives. Surveillance and Security: These vehicles can be deployed for perimeter security, patrolling, and surveillance purposes. They can monitor sensitive areas, detect intruders, and provide early warnings to human operators.

### III. LITERATURE SURVEY

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### IV. SYSTEM DESCRIPTION

Block Diagram:

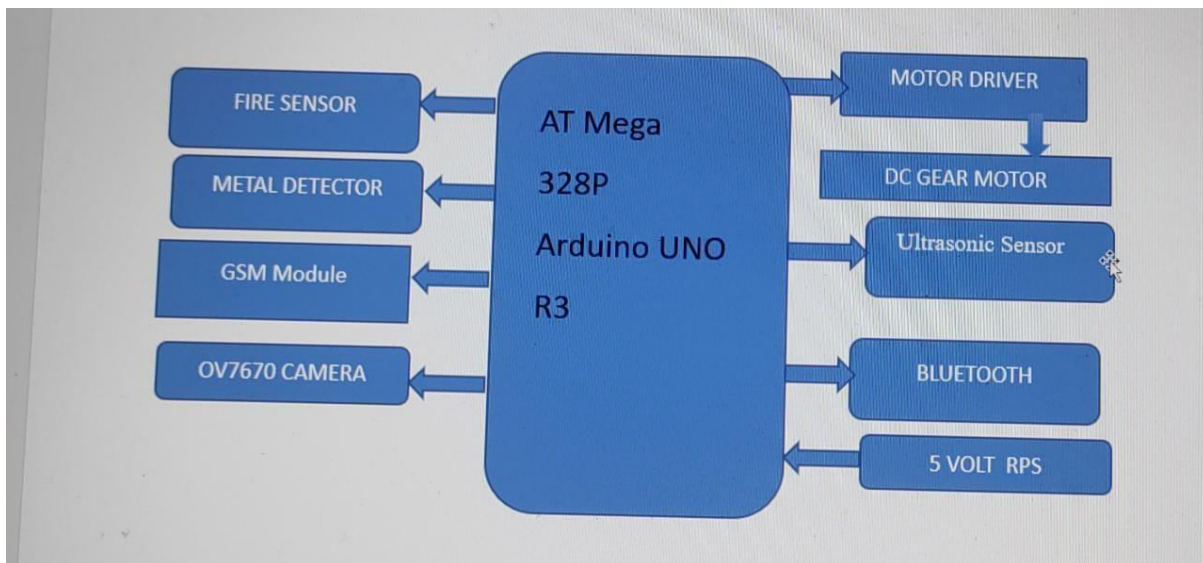


Figure No. 1: War Field Robotic Vehicle Block Diagram

#### System Description:

The war field robot consists of Arduino uno board as a controller board. It has L293D motor driver IC's along with a HC-05 Bluetooth module. Two DC motors are also used for the motion of the robot. The night vision wireless camera is attached with the robot in order to monitor the situation and the camera can be rotated 360 degrees via the android application through motor. The Sydney siege is considered one of the historic movements in the field of automation and robotics. The main technology used here for serial communication with the robot is the Bluetooth technology. Bluetooth technology can be used to share data between two devices considering the range between two devices. The Bluetooth module HC-05 will be connected with the robot and the commands to the robot will be given through the android application. The main objective behind developing this robot is for the surveillance of human activities in the war field or border regions in order to reduce infiltrations from the enemy side. The robot consists of night vision wireless camera which can transmit videos of the war field in order to prevent any damage and loss to human life. Military



people have a huge risk on their lives while entering an unknown territory. The robot will serve as an appropriate machine for the defense sector to reduce the loss of human life and will also prevent illegal activities. It will help all the military people and armed forces to know the condition of the territory before entering it.

**Circuit Diagram :**

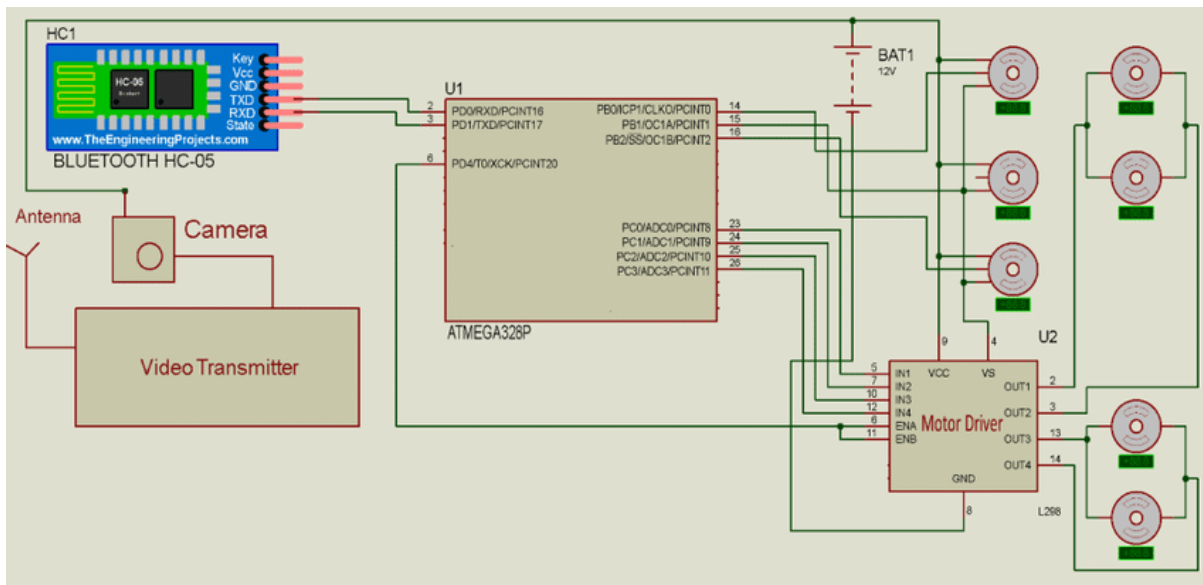


Figure No. 2: War Field Robotic Vehicle circuit Diagram

**Components:**

- Arduino Uno R3 (ATmega328p)
- GSM Module SIM 800A
- OV7670 CAMERA
- Fire Sensor SW-420
- Metal Detector Sensor
- Motor Driver
- DC Gear Motor
- Bluetooth

**Working Principle:**

Remote Control or Autonomy: They can be controlled remotely by human operators or operate autonomously using pre-programmed instructions. War field robotic vehicles can be remotely controlled by human operators or operate autonomously using pre-programmed instructions. Remote control allows human operators to manipulate the vehicle's movements and actions in real-time, while autonomous vehicles rely on sensors, algorithms, and artificial intelligence to navigate and make decisions independently.

Sensing and Perception: Equipped with sensors such as cameras, LIDAR, radar, and infrared, they perceive their environment, detect obstacles, and identify targets. Robotic vehicles are equipped with various sensors such as cameras, LIDAR (Light Detection and Ranging), radar, and infrared sensors. These sensors enable the vehicle to perceive its environment, detect obstacles, identify targets, and gather relevant data for decision-making. Perception algorithms process the sensor data to create a situational awareness map.

Mobility and Locomotion: They employ wheels, tracks, or legged mechanisms to traverse challenging terrains and navigate obstacles. War field robotic vehicles are designed to traverse challenging terrains encountered on the battlefield. They typically employ different types of locomotion systems, including wheels, tracks, or legged mechanisms. These mechanisms provide stability, and the ability to negotiate obstacles such as rough terrain, stairs, and debris.



**Weapon Systems and Payloads:** Some vehicles are armed with weapon systems or carry payloads for specific missions, such as machine guns, missiles, or reconnaissance equipment. Some war field robotic vehicles are armed with weapon systems or carry payloads to full fill specific missions. These weapon systems can include machine guns, grenade launchers, anti-tank missiles, or other types of munitions. Payloads may include reconnaissance equipment, communication devices, medical supplies, or other specialized tools

**Communication and Networking:** They use wireless communication to transmit data, receive instructions, and coordinate with other vehicles or human operators. Robotic vehicles often require communication with human operators or other vehicles in the battlefield. They utilize wireless communication systems to transmit data, receive instructions, and relay information. This enables coordination between multiple vehicles or integration into a larger military network.

**Decision-Making and AI:** Autonomous vehicles use algorithms and AI to interpret sensor data, plan paths, avoid obstacles, and execute mission tasks. Autonomous robotic vehicles rely on sophisticated algorithms and artificial intelligence to make decisions based on the perceived environment and mission objectives. These algorithms interpret sensor data, perform obstacle avoidance, plan optimal paths, and execute mission-specific tasks. Machine learning techniques may also be employed to improve the vehicle's performance over time.

**Safety and Redundancy:** They incorporate safety measures, redundancy, and fail-safe mechanisms to ensure continued operation and prevent unintended actions or harm to friendly forces. Safety is a critical aspect of war field robotic vehicles. They incorporate redundancy in their systems, including backup power sources, redundant sensors, and fail-safe mechanisms to ensure continued operation in the event of component failures or hostile actions. Safety protocols and rules of engagement are programmed to prevent unintended actions or harm to friendly forces.

## V. CONCLUSION

In this PROJECT, a robot is described that uses night vision wireless camera which is operated by an android application. This robot can be further modified using gas sensors as well as bomb diffuse kit. This model of a robot has various applications that include military missions, wireless security and surveillance and search and rescue operation.

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