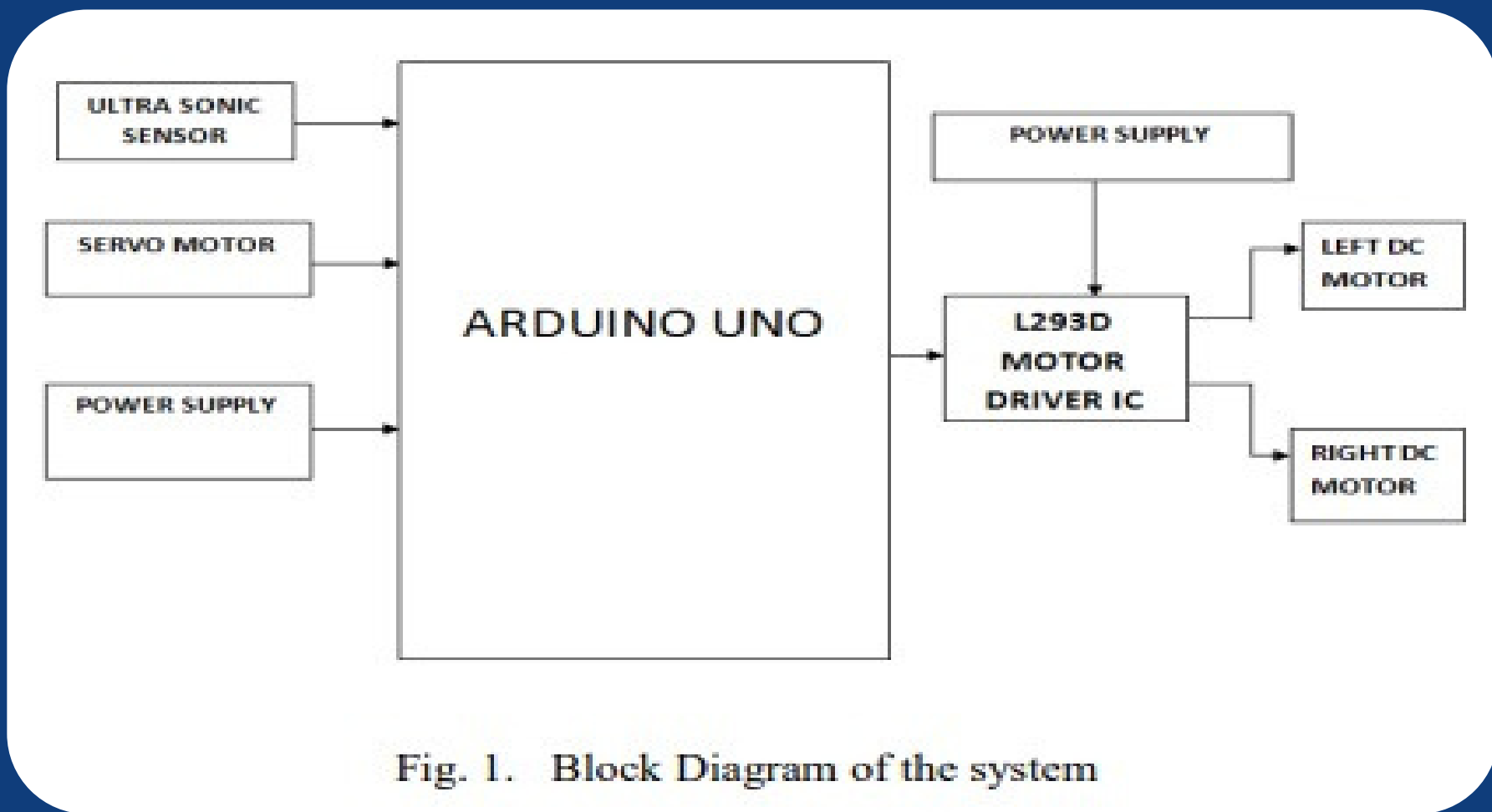


PROBLEM STATEMENT

In modern combat, soldiers face high-risk situations that demand quick and precise responses. This project proposes a semi-autonomous vehicle equipped with a radar and camera to detect and target enemy vehicles, reducing direct human involvement and enhancing soldier safety.

BLOCK DIAGRAM



CHALLENGE

- **Signal Interference:**
Maintaining accurate radar and camera functionality in environments with potential signal interference can affect detection and targeting efficiency.
- **Real-time Processing:**
Achieving fast, low-latency data processing is critical; delays could impact the effectiveness of the vehicle's response in combat situations.

FUTURE IDEA

Add long-range communication, drone support for aerial reconnaissance, and cybersecurity measures, transforming the vehicle into a fully autonomous, secure combat unit for advanced military operations.

PROJECT REPORT

AUTOMATIC TARGETING MILITARY

RADAR VEHICLE

ABSTRACT

The "Automatic Targeting Military Radar Vehicle" provides an innovative solution for military personnel to identify and neutralize threats. It operates both manually and autonomously, using radar for detection and a camera for real-time targeting. Controlled via Bluetooth using ESP32, it enhances both operational efficiency and soldier protection.

METHODOLOGY / DESCRIPTION

The Automatic Targeting Military Radar Vehicle operates in both manual and autonomous modes, making it versatile for various missions. Equipped with radar for threat detection and an ESP32 camera for real-time targeting, the vehicle can be remotely controlled via Bluetooth in manual mode. The operator receives live video feedback for precise targeting and neutralization.

In autonomous mode, the vehicle navigates using ultrasonic sensors, avoiding obstacles while continuously scanning for threats. Once a target is confirmed, it autonomously locks onto and neutralizes the enemy. The vehicle is powered by an Arduino Uno, with an L298N motor driver controlling movement and the ESP32 CAM handling target detection. A Java-based interface ensures seamless communication for control.

This dual-functionality provides flexibility, making it ideal for military operations, surveillance, and disaster response.

APPLICATION

1. **Combat and Warfare:** Assists soldiers by detecting and neutralizing enemy vehicles without direct human involvement.
2. **Surveillance and Border Security:** Capable of autonomous patrolling and monitoring in high-risk areas.
3. **Disaster Response:** Can be adapted for search-and-rescue operations, identifying survivors or navigating dangerous terrains.

CONCLUSION

The "Automatic Targeting Military Radar Vehicle" project offers a cutting-edge solution for military applications, blending precision in manual control with the autonomy required for modern warfare. By integrating robotics, radar, and camera technologies, this project represents a step forward in life-saving battlefield innovations.

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