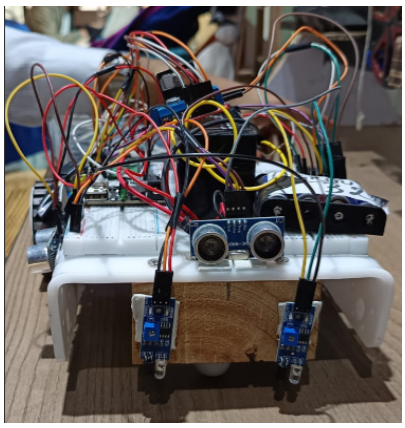
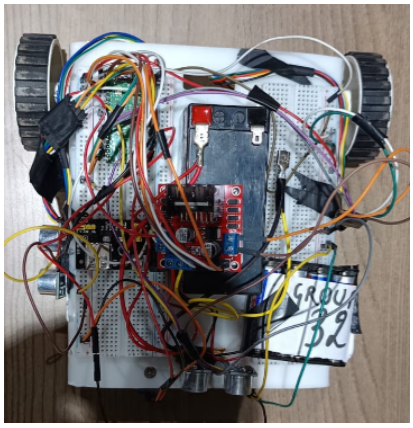
Project Report– (Team 32: Ananya Ramesh, Karri Divya Naidu, Manshika Jain, Rejin Prasad)

Car Robot Photo

Competition Performance

- **Pre-Trial:** Robot successfully moved through the initial path and responded to sensors correctly.

Round 1	Round 2	Round 3	Final
65	Not Available	80	Not Available

Sensors Used

- **IR Sensors (Left, Middle, Right):** Used to detect black base around cans.
- **Ultrasonic Sensor:** Used to detect cans and obstacles(other Robot) by measuring distance
- .**Motor Encoders:** Used for precise distance movement and accurate turning.

Motors & Electronics

- **DC Motors with Encoders** for controlled movement
- **H-Bridge Motor Driver** for forward/backward control
- **Raspberry Pi Pico** microcontroller
- **Power:** 12V battery for motors + AA batteries for logic/sensors

Comments on Robot Performance

1) **What worked well:**
- The ultrasonic + small-step approach made detection accurate.
- Encoders helped with precise 90° and 30° turns.
- IR sensors ensured the robot never (almost) crossed boundaries.

2) **What could be improved:**
- Sometimes the ultrasonic sensor gave unstable readings.
- Wiring loosened occasionally due to vibration.
- Strong lighting affected IR accuracy at times.