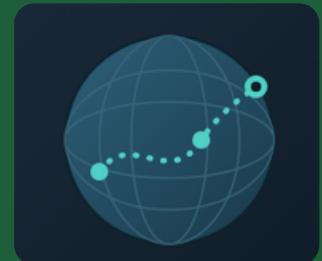
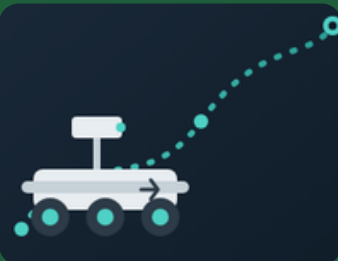
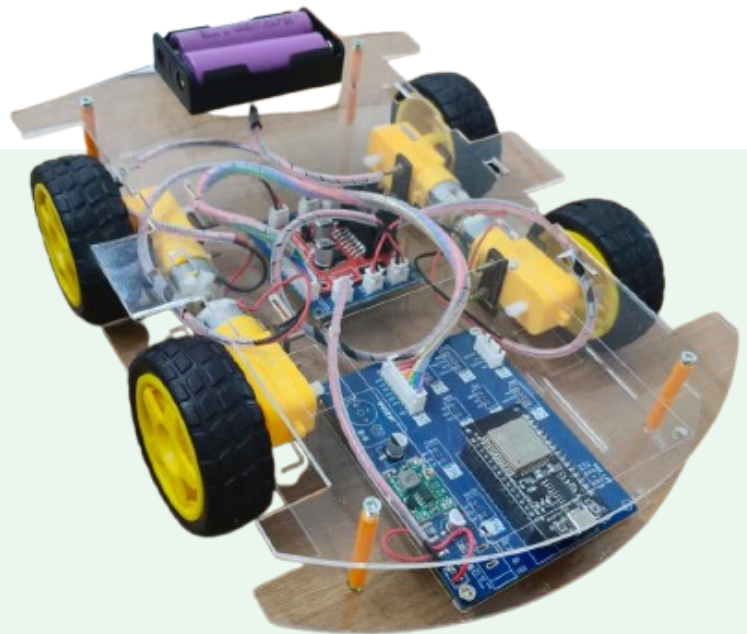


PRE-PLANNED ROVER

*Design and Development of a Rover That Follows a Pre-Planned Path
Using Programmed Navigation Instructions*

2026



SAGEDEL TECH LLP

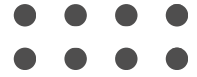


Phone
9958007460



Website
www.sagedel.com

PRE-PLANNED ROVER

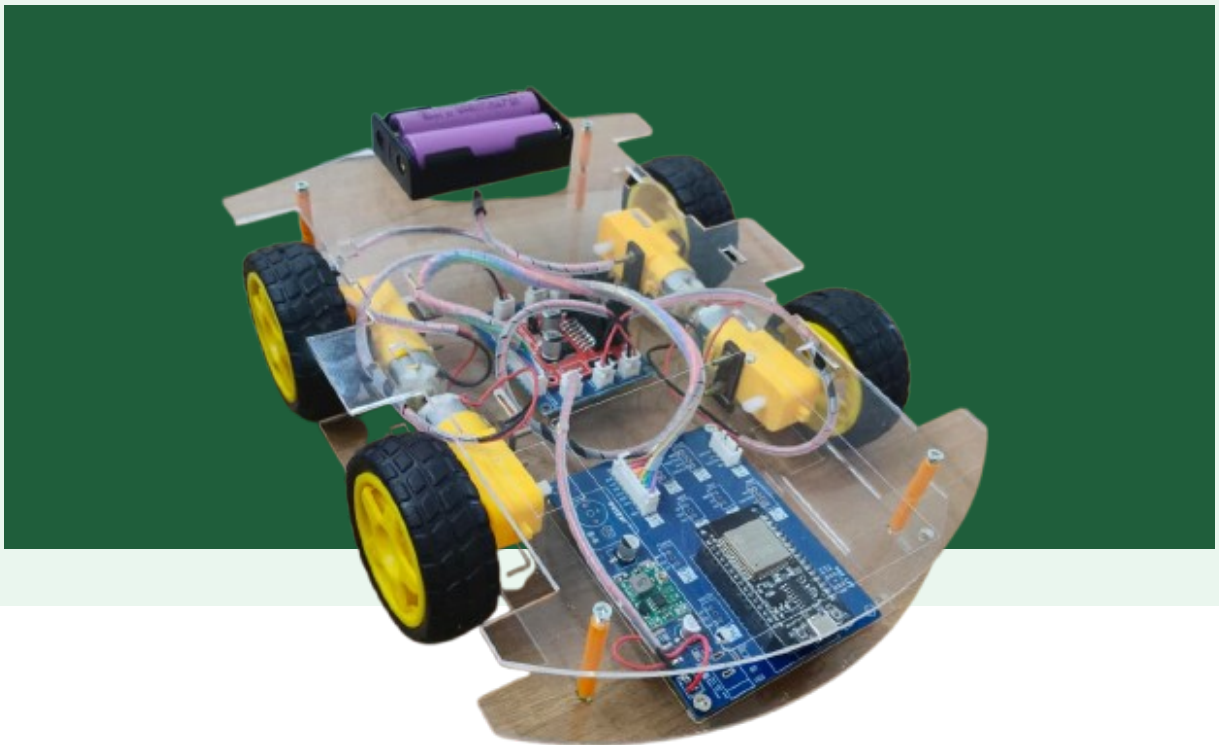


Objective:

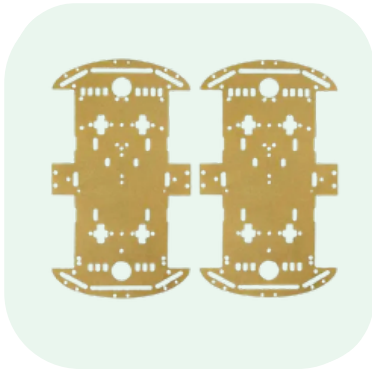
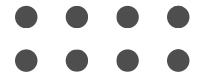
Learn how to interface motor drivers and movement sensors with a microcontroller to program and execute a fixed, pre-planned path, enabling the rover to navigate accurately across different field zones without real-time human control.

What it Does:

The microcontroller executes a pre-loaded sequence of movement instructions as the rover travels along its fixed path. It processes these stored commands step-by-step, controlling the motors to move straight, turn, or stop at the exact points defined in advance, guiding the rover accurately from the starting point to its destination.



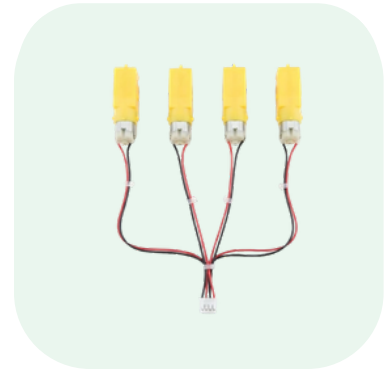
Modules & Components used:



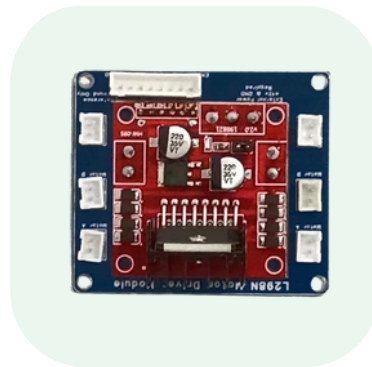
Two-Layer Acrylic Chassis



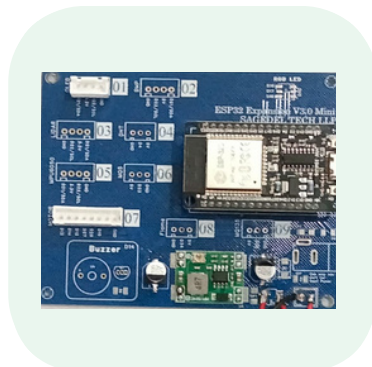
Wheels



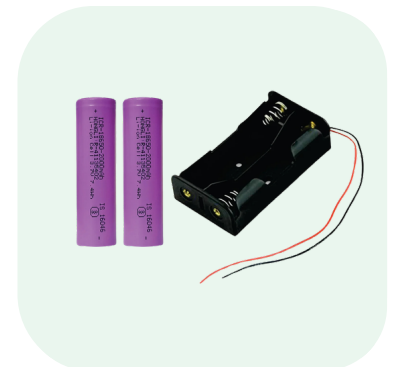
BO Motors



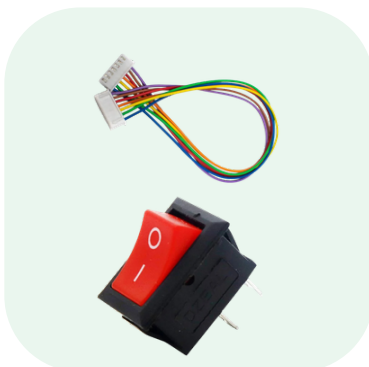
L298N Motor Driver



ESP32 Expansion Board



Li-ion Cells & Battery Holder



JST Cables & Switch



Spacers, Nuts- Bolts & Cable Ties

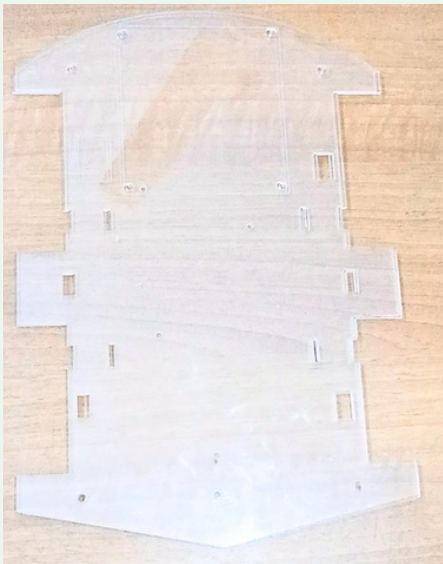
Step-by-Step Assembly & Connections



Step 1: Place the lower acrylic chassis on a flat surface and remove the protective film.

Step 2: Fix the four spacers at the corners of the lower chassis using nuts and bolts.

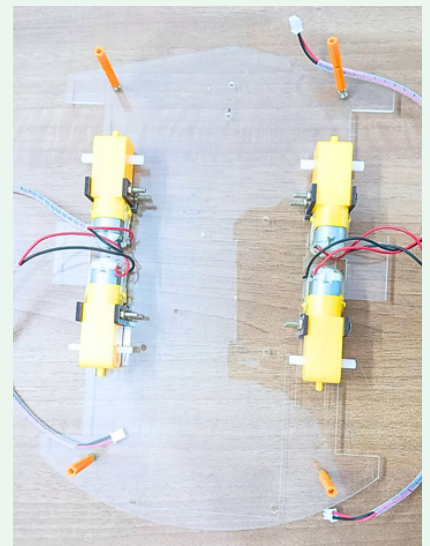
Step 3: Attach the 4 BO motors to the chassis. **Follow the Motor Assembly Steps for all four motors.**



Step 1:

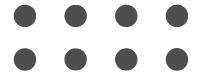


Step 2:



Step 3:

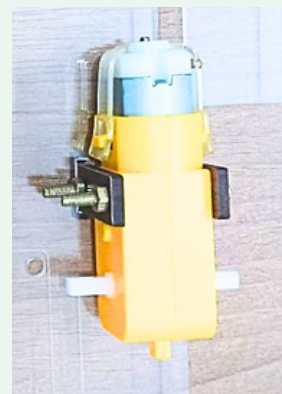
Motor Assembly and Fixing



Step 1: motor brackets on the chassis.

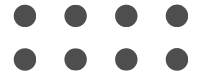


Step 2: BO motor between the brackets.



Step 3: Secure it using the screws and nuts.

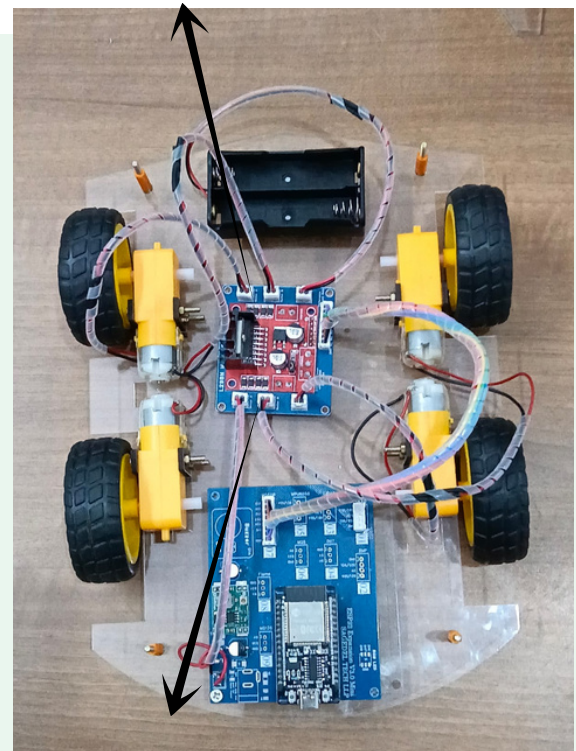
Motor-to-Driver Connections :



Step 4 : Connect the left-side pair of BO motors in parallel to **OUT1** and **OUT2** on the L298N motor driver.

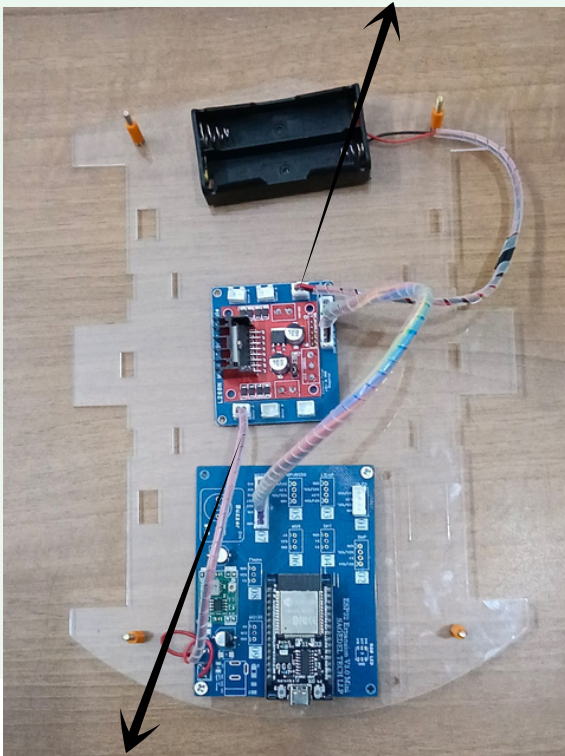
Step 5 : Connect the right-side pair of BO motors in parallel to **OUT3** and **OUT4** on the L298N motor driver.

Connect the right motors to OUT1 & OUT2



Connect the left motors to OUT3 & OUT4

Connect the battery to
12V & GND



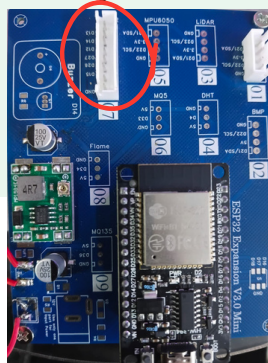
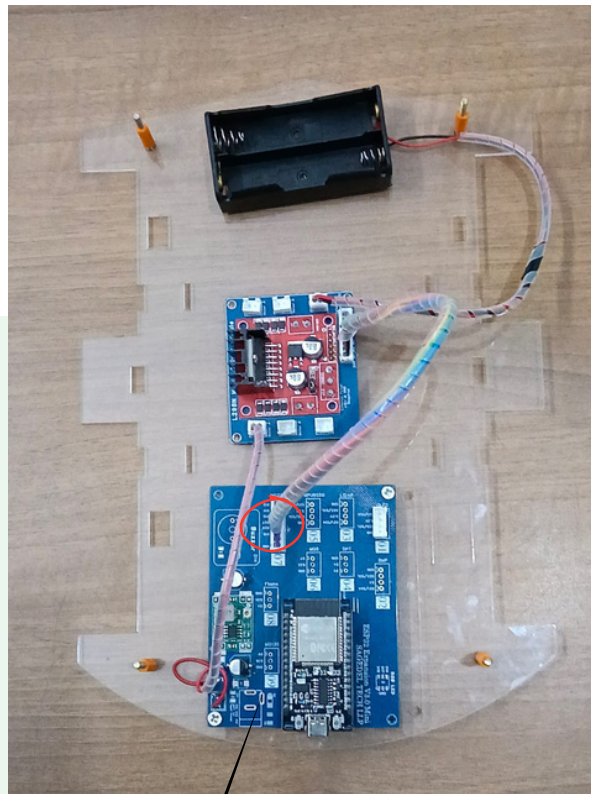
Connect the ESP power input to
the reference ground.

Specific Port Connections



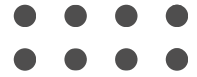
Step 6: Motor Driver Interface (Connected to **Port 7**):

- Plug the main multi-wire control harness/JST cable from the L298N motor driver directly into the designated Port 07 header slot on the ESP32 expansion board.

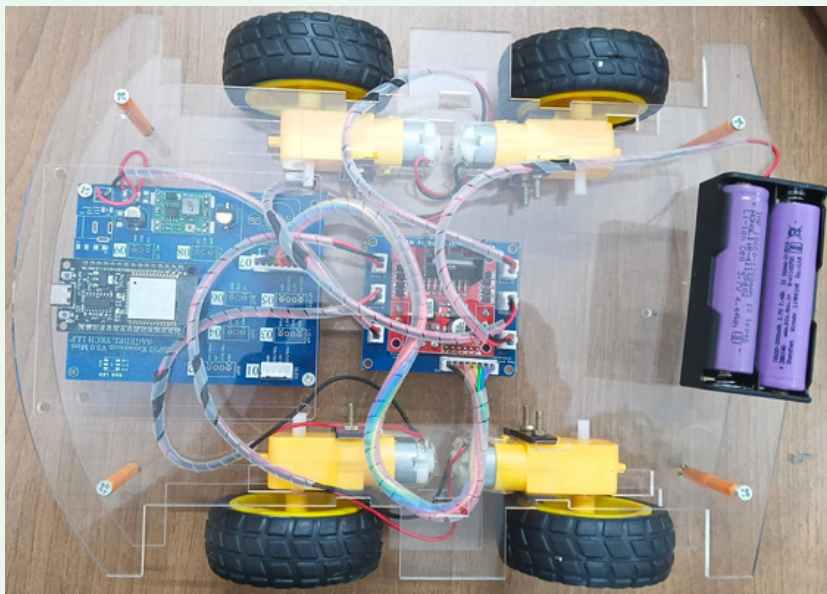


Port No. 7

Step 4: Final Cable Management



- Bundle all loose wires neatly using your spiral wire wraps and cable ties so they do not interfere with the wheels.



Calibration:

It involves mapping the raw movement/encoder readings between the start and end points to establish accurate distance and turn values, ensuring the rover's path is calibrated precisely from 0% to 100% of the planned route.