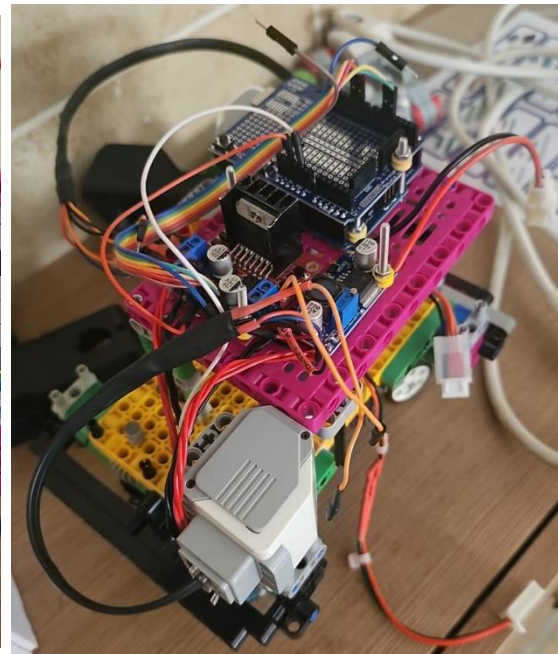
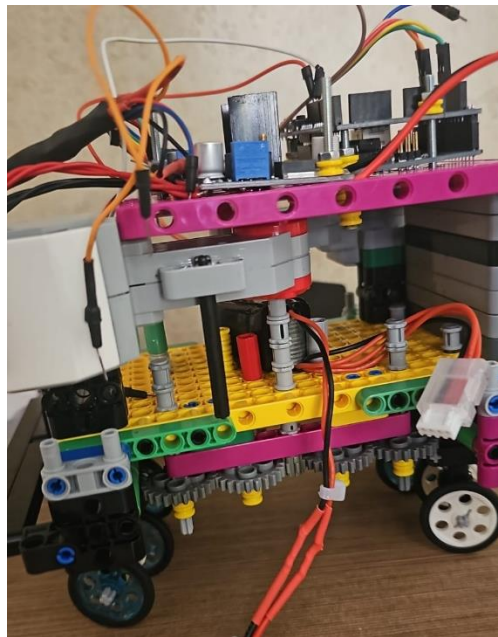
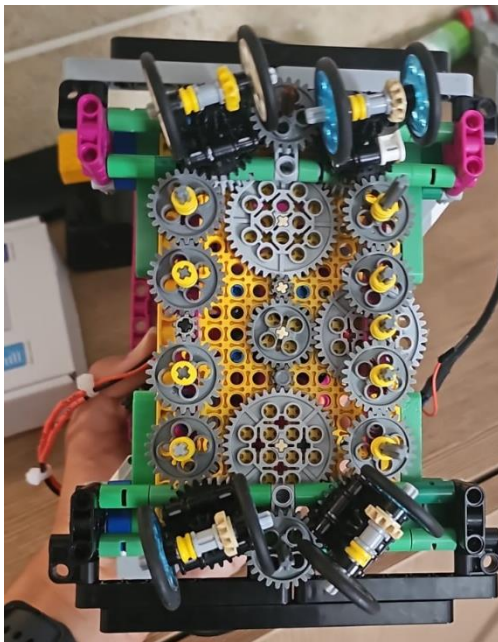


Mobility Management

All of the robots we used for testing were made from Lego, using Lego EV3 motors powered by an Arduino through an L298N motor driver and using 3 18650 lithium-ion batteries.

First, we used a robot that has a back wheel drive differential mechanism, and front wheel steering. We used 1 EV3 medium motor for driving and one for steering. But this robot had many disadvantages, like weak torque and weak steering.

Then we worked on a crab walk robot (the photos of the mechanism will be linked) which uses one EV3 medium motor to drive all four wheels at the same time, and another to rotate all four wheels at the same time. This robot also had some disadvantages, such as delay in gear ratios, very high torque which caused the gears to lag and fall apart.



We last resorted to using a 4-wheel drive robot also using EV3 motors controlled by Arduino. The robot has 2 differential mechanisms (one in the front and one in the back) both connected to one EV3 large motor. Spike prime wheels were used for all four wheels. One EV3 medium motor was used for front and back steering using a gear rail. The purpose of the dual steering is to get sharper turns. All the gears used are Lego gears taken from EV3 and Spike Prime kits.

