

AC_TEAM_X



**MOBILITY
MANAGEMENT**

25GA370 DC gear motor:

We have used 25GA370 DC gear motor with built-in encoder. The best advantage of this motor is that we don't need to buy external encoder for pulse count .Operating at 12V, the motor's speed ranges from 280 RPM at 12V, 210 RPM at 9V, to 325 RPM at 14V. This motor can be operated at lower speeds as well .it has 6 pins 2 for motor , 2 encoder +,- and two encoder pulse count signal pins



WHEELS:

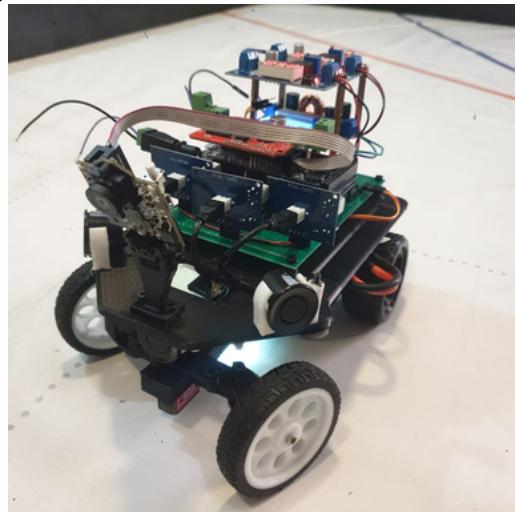
rear wheels



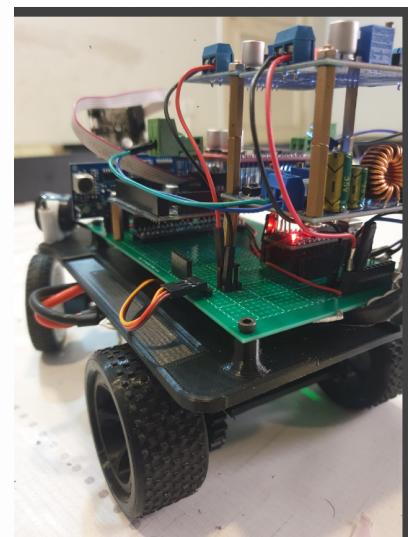
front wheel



We have used thin wheels at the front and thick wheels at the back , the reason for it is that at the front we don't want more width of the robot so that is why we decided to use thin wheels at the front also these thin wheels are lighter than thick wheels so there will not heavy load on servo motor in this way . Thick wheels at the back are 3d printed and we have used it because of their stiffness and grip to ground. This configuration is helping us in moving our car accurately.



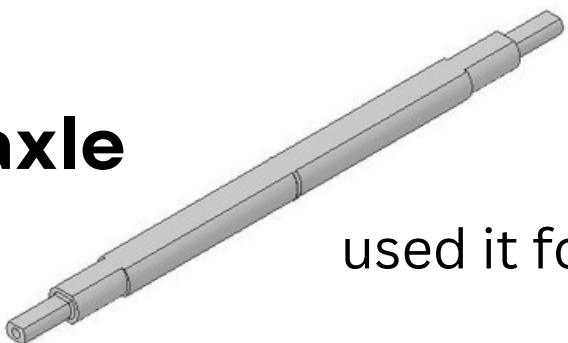
front side



back side

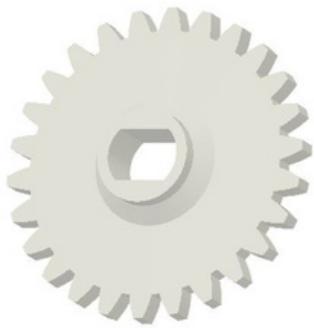
3d printed parts

axle



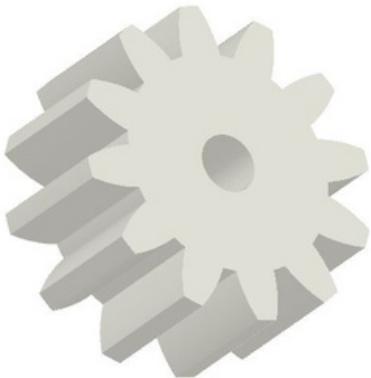
used it for connecting back wheels

big gear



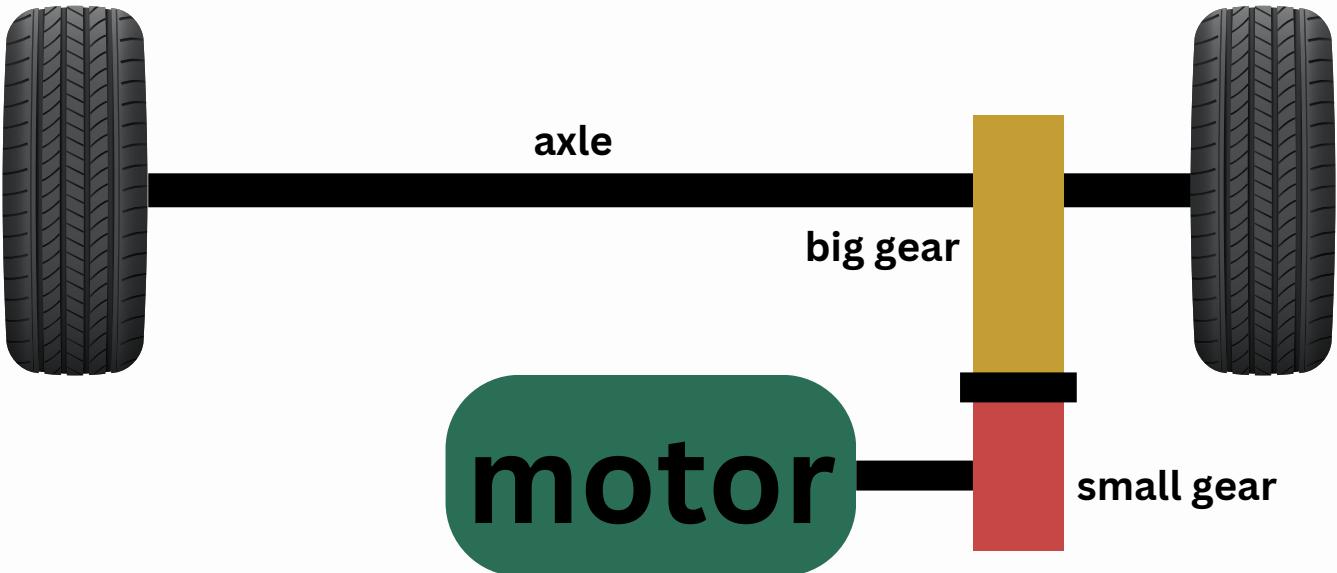
put it on the above axle and then attached a small gear attached to motor.

small gear



put it on motor shaft and then connected it with big gear which is connected with axle which is in turn connected with back wheels

Block Diagram of back side

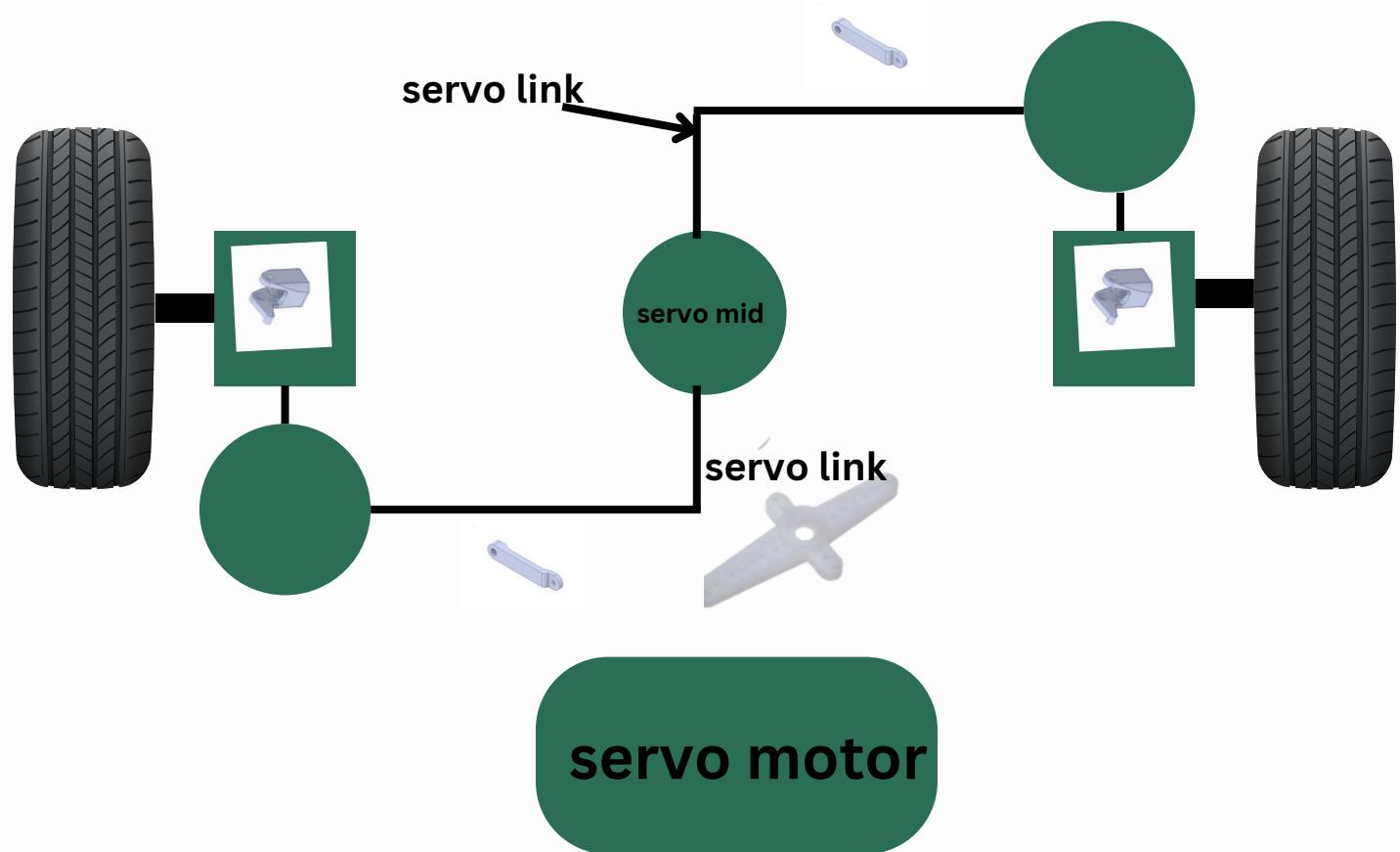


why small gear on motor and big gear on axle of wheels?

In a gear reduction system, having a small gear on the motor and a larger gear on the axle connected to the wheels results in an increase in torque and a decrease in rotational speed.

This setup follows the principle of gear ratios: when a smaller gear (pinion) meshes with a larger gear (gear wheel), the rotational speed of the driven gear (axle connected to wheels) decreases while the torque increases.

Block Diagram of Front side



Front side of robot

At the front side , we have designed our links in such a way that we get maximum left and right turns. So, for the movement of wheels we have designed wheels hub(the wheels are connected with hub with the help two bearings) and then connected links with it which are in turn connected with servo motor .

