**The bot designed by you is climbing stairs. Midway through the climb, one side of the crawler (left or right) stops due to a motor fault or gear jam.**

**Answer the following:**

● **What will happen to the robot’s motion when this failure occurs?**

If the motors stop on one side, then the bot starts moving toward the side which the motor has stopped. This will cause tilting of the bot and a wrong mechanism of climbing.

● **How would this affect its balance, climbing path, and risk of tipping over?**

If there is a structural failure then the bot will start tipping and then may cause bending and the disturbance of the COM of the bot.

Instead of the bot going in the straight path, and may cause slipping due insufficient torque.

**● How can you detect the fault?**

So I would like to detect the fault with the help of a feedback system and the servo output mechanism.

I would like to monitor the RPMs of the motors using the encoders.

I would also like to use an IMU sensor.

Use of servo motors at the L shaped part.

● **What strategies would you use to prevent the robot from tipping or getting stuck?**

So, as I am using differential drive mechanism all the wheels on right will have the same rpm now lets say one of the wheel is having less rpm this means that the wheel showing different rpm is having issue then I will make the code that this will make the bot stop where it is.

If the sensor detects any unexpected disturbance, then it stops the climbing process.

I will use an LED that tells the servo output of the servo motors is different then it will display stall and stop the further climbing process.

Also, I would like to use the telephone wires for connecting the motors with the drivers so that there is no failure due to the wire length shortage.

(I have not shown the IMU sensors, Servo motors, and encoders in the Image attached for the part\_a submission, as I feel that the part\_a submission must include only the parts used for driving the bot).