ECE 153b final project proposal:
Name: Zhanglu Wang and Ding Ke

We are going to build a floor sweeping robot. We will use the ultrasonic sensor to detect the environment and as a guide for the robot. And we will record the robot's previous movement in steps. The robot cleaner will contain 5 motors, 2 for the wheels and 2 for sweeping brushes, and one for vacuum. And the 1 or 2 ultrasonic sensor will be used. For control the robot, we will using bluetooth through UART protocol to connect the control signals. The user have the ability to weak up the robot cleaner and when the robot is finished its task, it will send back a message to user to inform it is done. And for the motor we will be controlled by the H bridge so they can move the opposite way. For direction control, we will using the gyroscope to measure the turning angle of the robot cleaner. And will be using the SPI protocol to communicate with the STM32 board.

Peripherals:
Step motors
Ultrasonic sensor

Protocols:
UART: bluetooth connection
SPI: gyroscope connection

Responsibility:
Our group contain two members, Zhanglu Wang and Ke Ding, all the parts will need both member to work together, and we both responsible for the entire project,

Software structure:

Ultrasonic module:
If detect distance < 5cm{
1. Stop
2. Turn left 90 degree (calculated by gyroscope)
3. Move forward 1 "body length"
4. Turn left 90 degree (calculated by gyroscope)
5. Continue move forward

* (if last movement is turn left, then turn right this time)

Bluetooth module:
If scanned "work"{
Start work}
If scanned "stop"{
Stop work}
If scanned "W" { forward }
If scanned "S" { downward}
If scanned "A" { left turn 90 degree}
If scanned "S" { right turn 90 degree}
If done {send "done"}
If start work { send "start work"}

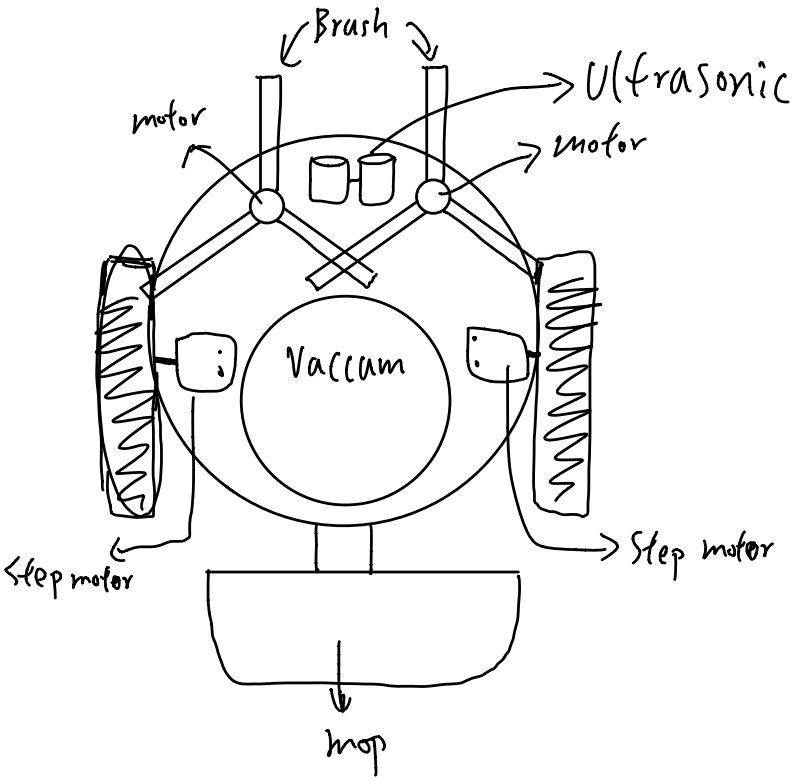
Gyroscope module:
If degree > 90 degree + 1{
Turn back }
If degree < 90 degree -1{ turn back }

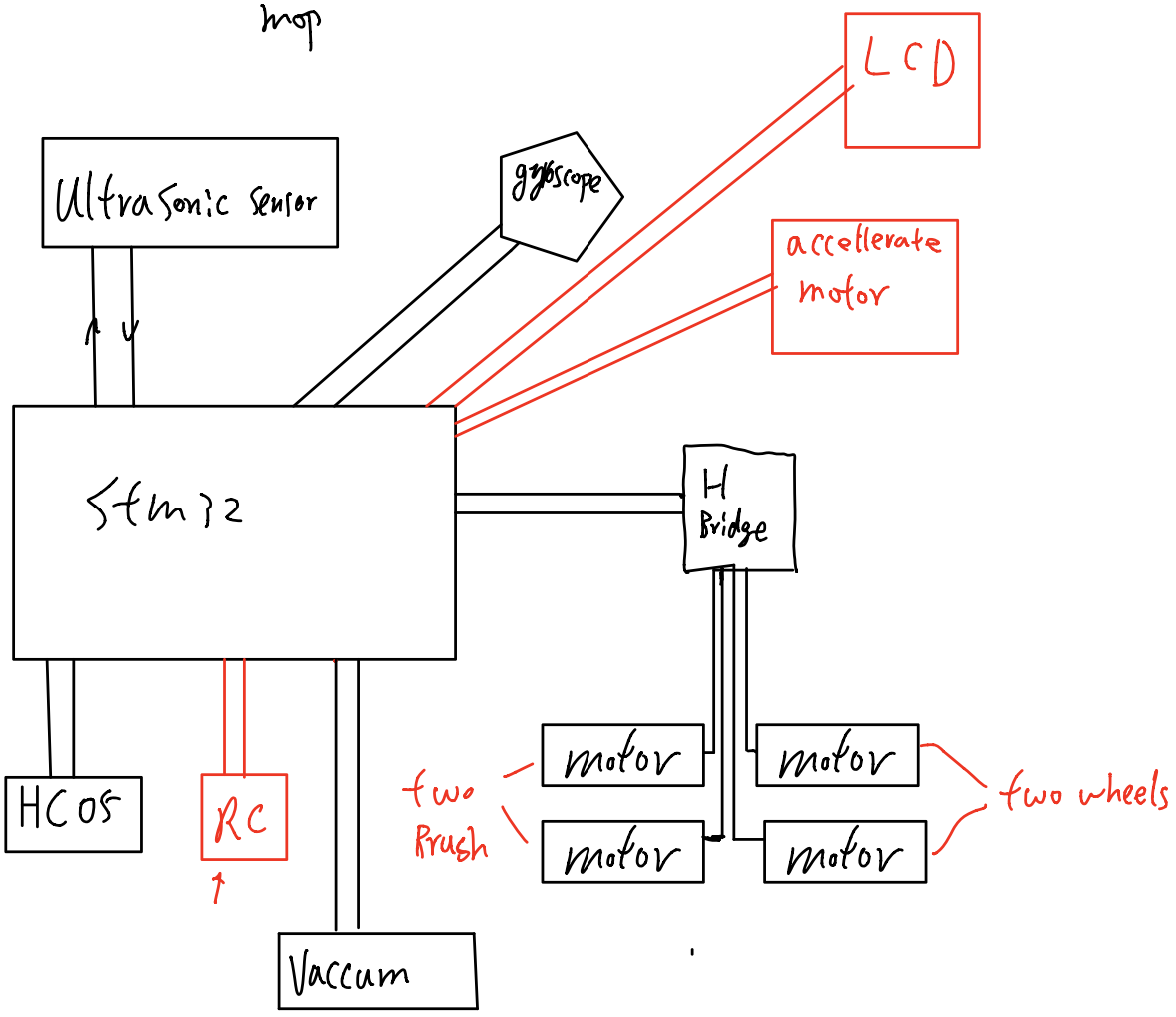
The following module is not guaranteed gonna in our module as time consuming:

RC Module:
Use as a remote toy

LCD Module:
Display status:
{work, done}

Accelerate Module:
Calculate the path it has traveled
And send the area it has been cleaned to the console when it is done.





The red part might not be in our final project as time consuming