Tinkering lab Project

Group= Tuesday G#1

Project= Smart Vacuum Cleaner Robot

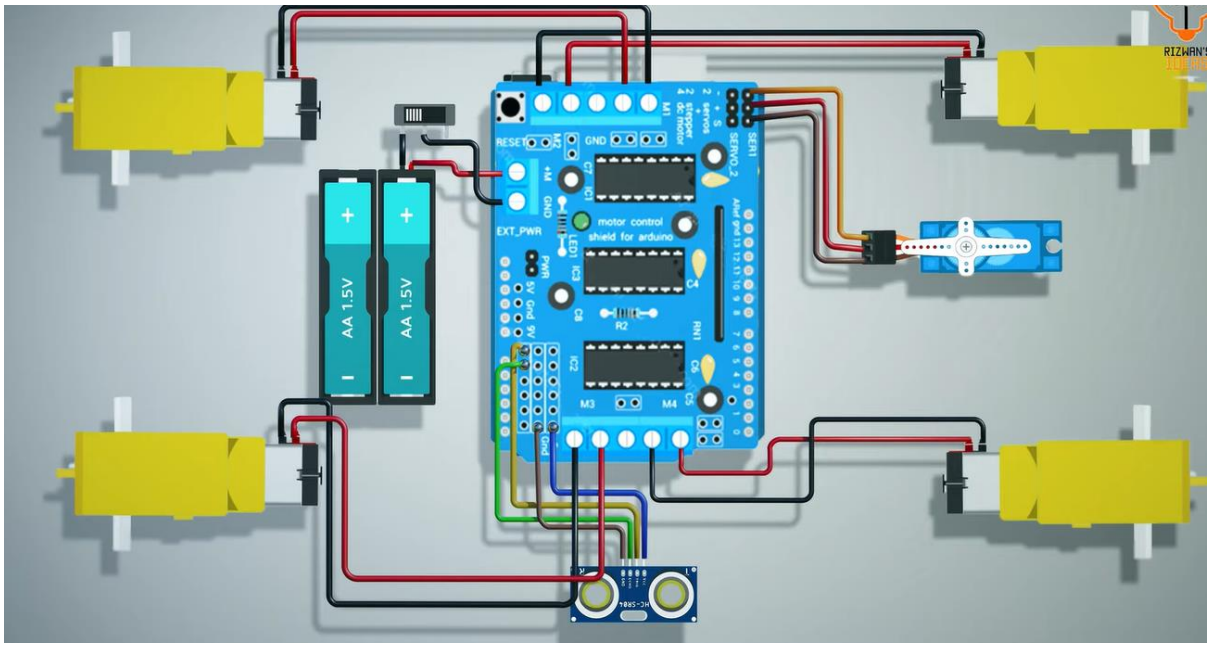
Implementing a Single Point of Control (SPOC) in an obstacle-avoiding car using Arduino involves several steps. SPOC typically refers to having a centralized controller that manages the decision-making process for the vehicle. Here's a basic outline of how you can implement this:

1. Identify the different states your car can be in. These may include:
    - Moving forward
    - Detecting an obstacle
    - Turning left
    - Turning right
2. Set Up Sensors: Connect ultrasonic sensors to detect obstacles around the car. These sensors will provide input to the SPOC system about the car's surroundings.
3. Design Decision Logic: Develop logic to determine the next action based on the current state and sensor inputs. For example:
    - If the car is in the "moving forward" state and an obstacle is detected within a certain range, transition to the "detecting obstacle" state.
    - In the "detecting obstacle" state, decide whether to turn left or right based on the obstacle's position.
    - Define criteria for transitioning between states. For example, after turning to avoid an obstacle, transition back to the "moving forward" state.
4. Implement Control Functions: Write functions to control the movement of the car based on the decisions made in the

decision logic. These functions should control the motors to move the car forward, backward, left, or right.

5. Organize Code Structure: Organize your code into functions or modules corresponding to different states and actions. This will make your code easier to manage and debug.

Arduino Uno and Arduino motor shield will be used as a single point of contact for all 4 wheal motors, servo motor, ultrasonic sensor, power supply, switch and 6V motor. Circuit diagram for the same is shown below:



Then components that we still need:

1. 12v AC to DC power supply
2. Lithium ion battery cell