

# ReqFun1\_GROUP\_E12

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## Implemented functions

- So far, we have developed a farmer robot capable of autonomously identifying the location of the brightest light. The motion of the vehicle should be moved from 50cm away of a half-cycle and headed to the light source with the corresponding parking point. PV cells should be faced to the light source after stopping. If the light is detected to be high in front, the car would be forward; if the light detected to be low, the car would be backward. The robot's car utilizes a photoresistor to determine the forward direction, while the forward/backward movement is determined based on the power generated by the solar panel. This enables the robot to locate the position of the strongest light source.

## Additional sensor

- Currently, under the stage of the car assembly with the solar charging function, our group does not add additional sensors.

## Steering control for wheel

- The direction of wheel movement, whether leftward or rightward, depends on the comparison of light intensities between the left and right sensors. If the left sensor detects a brighter light than the right sensor, the right servo will turn at a larger angle compared to the left servo. Consequently, the entire car will turn left, and vice versa.
- To accomplish this, we have implemented a function called `tracker()`, which reads the values of the two photoresistors. The analog signal from the photoresistors is converted into numerical values representing the slope, allowing for comparison.

## Distance control

- Our functions for the distance controls define the backward and forward movement by comparing the value of the power sensor generating return data through the solar panel that indicates a greater or less light intensity – weather it needs to move nearer towards the sunlight. We also compare the current and voltage generated by the solar panel, which receives light energy, to calculate the power output of the panel. When the power from the solar panel increases, it indicates that the car needs to move forward, meaning the car has not reached directly below the light source.
- The forward function is executed simultaneously with the steering function.
- The power value is displayed on the OLED display.

We have also attached the code for your reference