



Lotus 2.0

Kaladesh



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Spring 2020
496-B

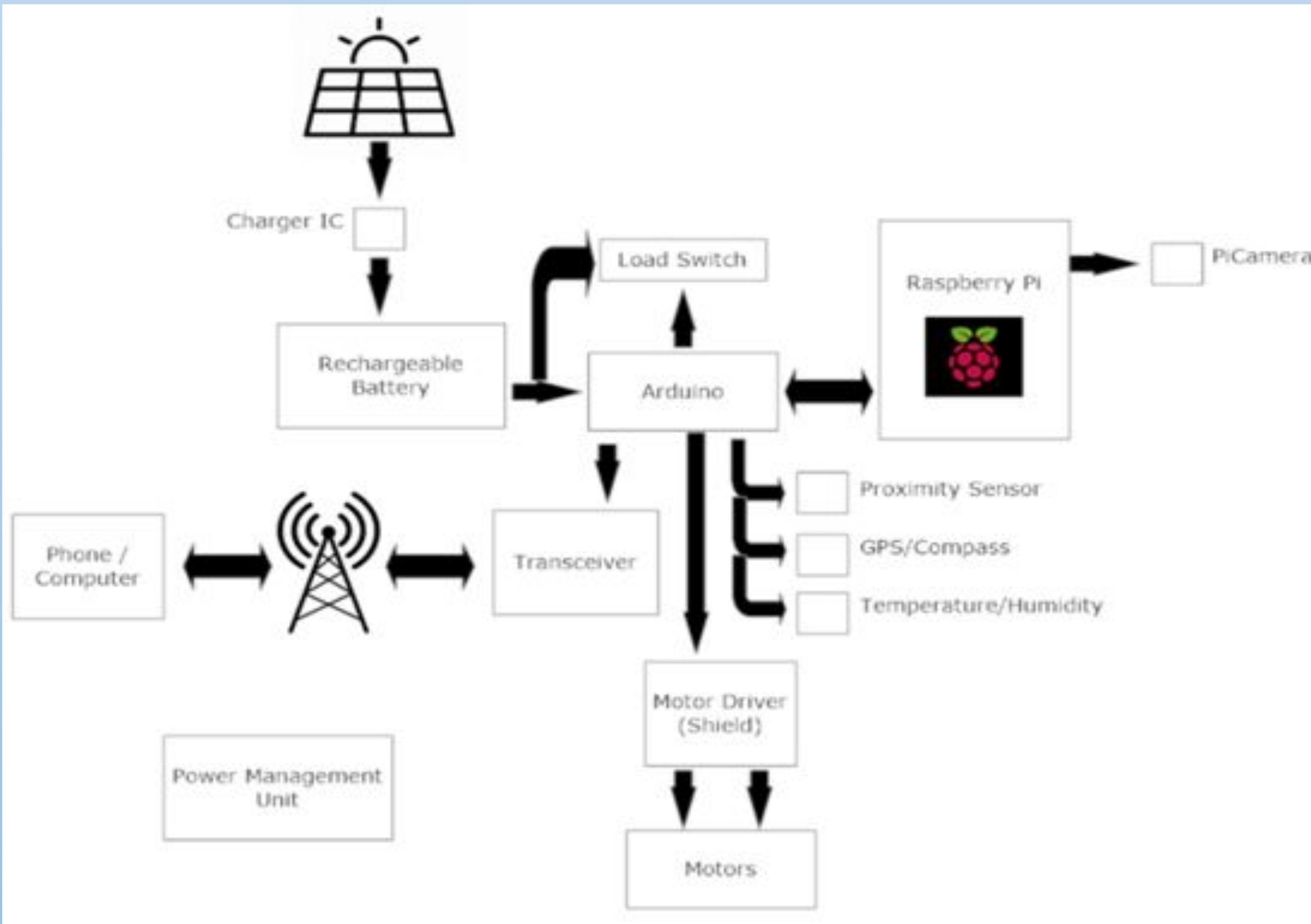
Project Overview

The Lotus 2.0 is a partially autonomous rover that will roam Salton Sea to take data measurements using a number of sensors, including temperature, humidity, and object detection. The user will have control over the rover's target destinations while the rover takes measurements as it locates to the desired destination. It will be battery-powered, which will be charged through a solar panel. The user will also be able to monitor the rover's power consumption to make the best use of its runtime before it has to charge up.

Lotus 2.0



System Block Diagram



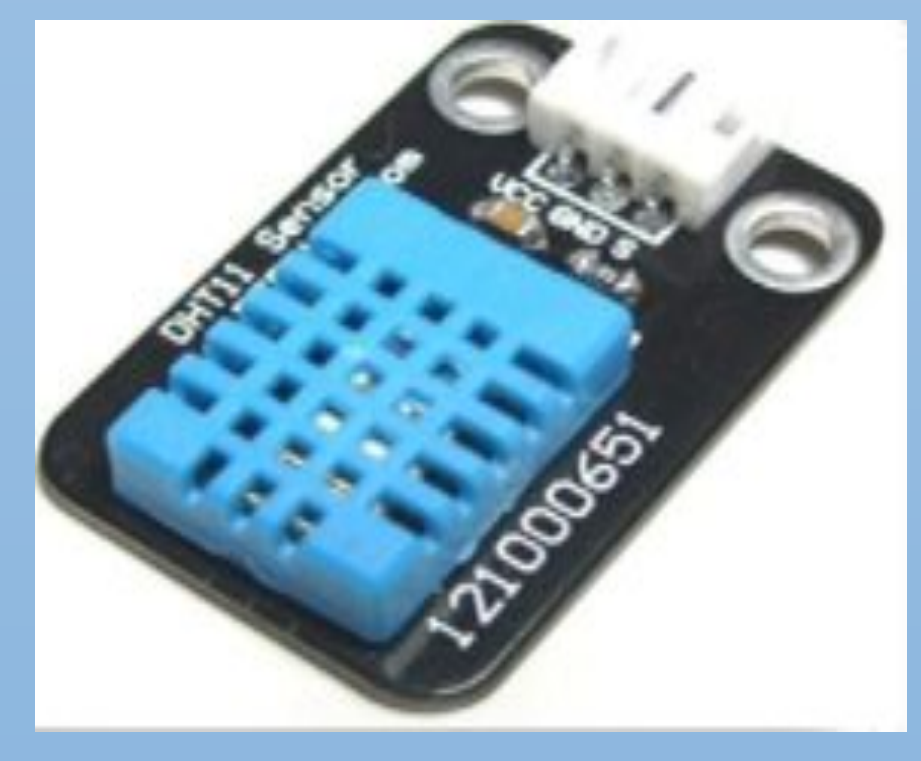
Hardware / Key Components



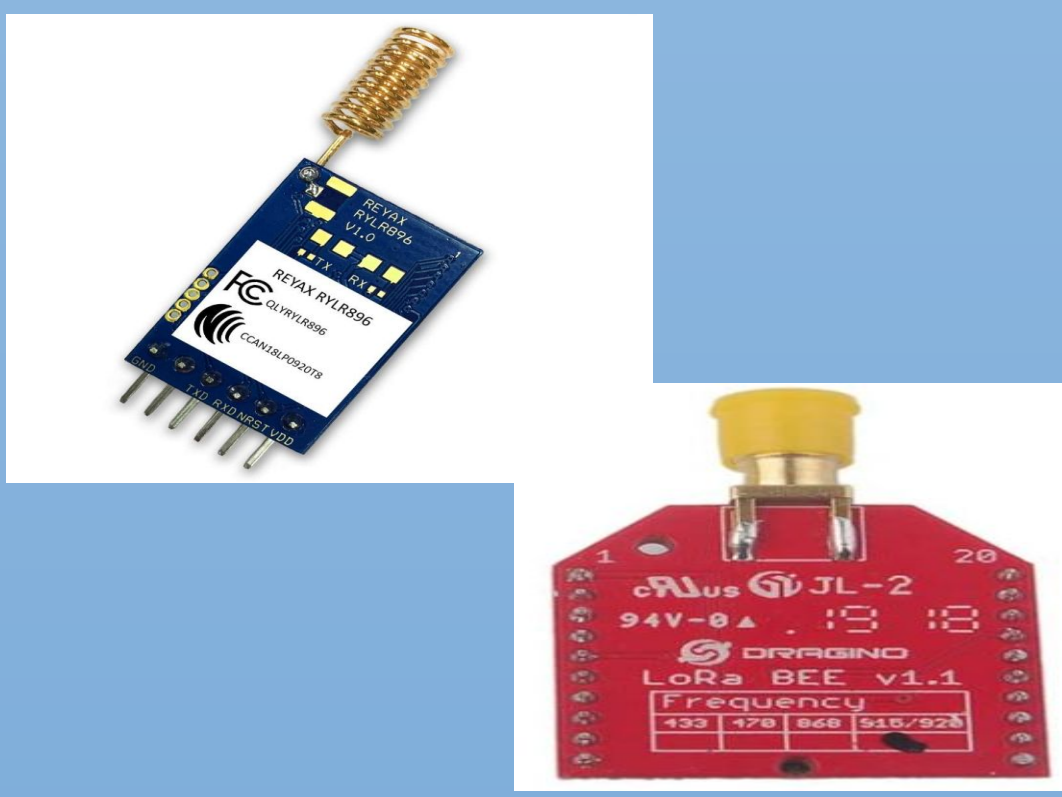
Microcontroller (Arduino)
Central system that manages the rover's mobility, radio communication, power, and sensors



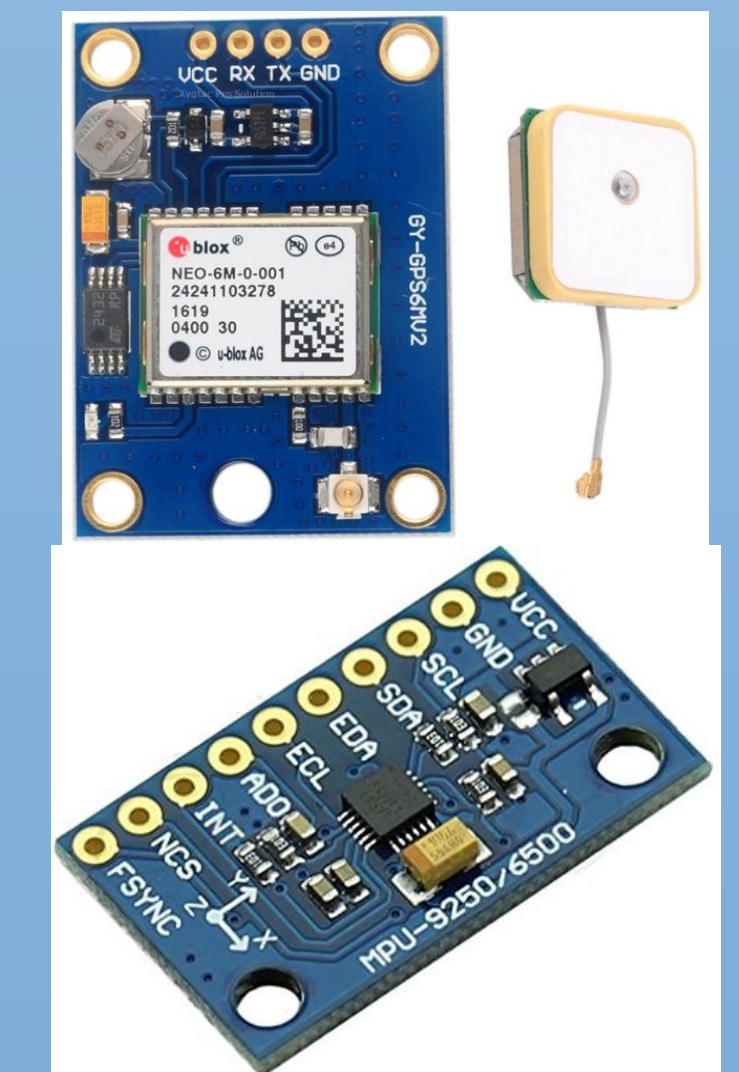
Raspberry Pi Camera
Object detection system that identifies wildlife



Temperature & Humidity Sensor
Manages system's mobility, radio communication, power, and sensors



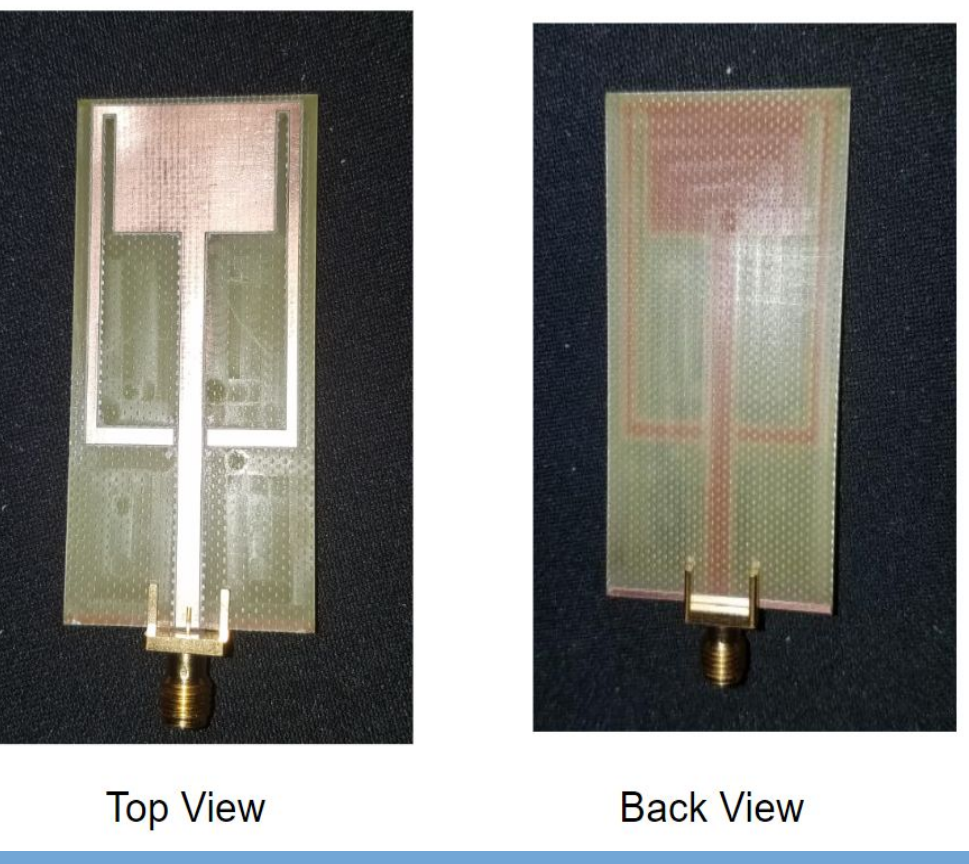
LoRa (Transceiver)
Sends and receives sensor data (i.e. Temperature, Humidity, GPS) with a range up to 10km+



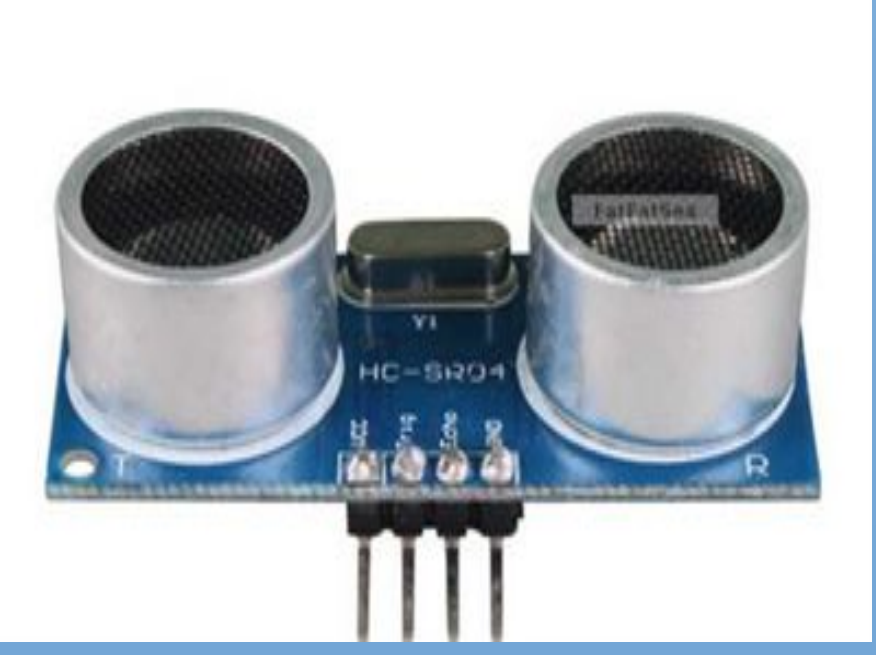
GPS & Compass
Primary navigation modules guide rover to the user's desired destination



Battery and Solar Panel
Primary power source, which can be recharged when needed using solar energy



915 MHz Microstrip Antenna
Low profile Microstrip antenna designed to resonate at 915 MHz for USA LoRa Modules and wireless networks



Ultrasonic Sensor
Operates in tandem with navigation modules to navigate around obstructing objects and structures



Power Accumulator
Central power monitoring system that measures the power consumed by each component to ensure maximum power optimization