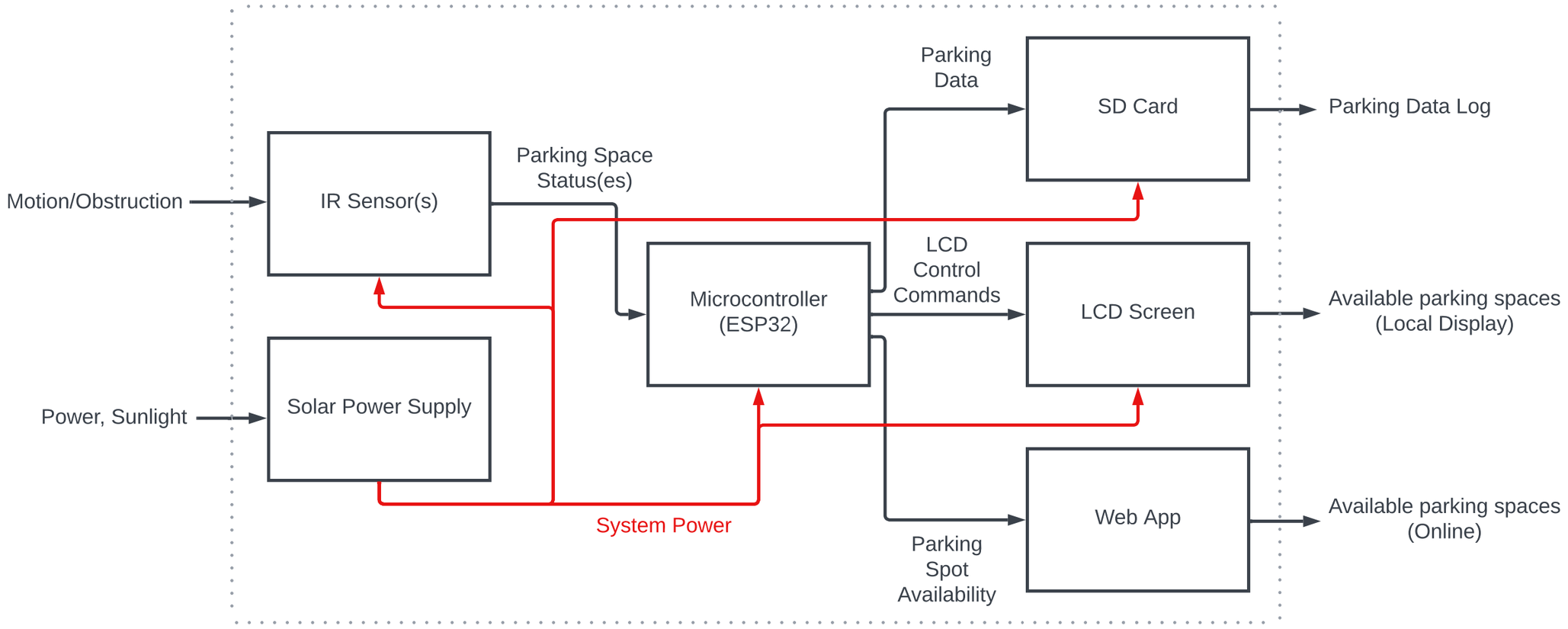
Parking Counter Device: L1 Diagram



Module	IR Sensor(s)
Inputs	Motion/Obstruction: Movement or physical obstruction within 15cm from the front of the sensing device(s). System Power: Regulated 3.3V and 5V DC power lines.
Outputs	Parking Space Status: IR sensing device outputs a 3.3v signal. 3.3v when space is obstructed, 0v when available/open.
Functionality	A IR sensor will detect if one of the spaces in the parking lot is taken.

Module	Solar Power Supply
Inputs	Power, Sunlight: Light from the sun (optimally bright, unoccluded, direct sunlight)
Outputs	System Power: Regulated 3.3V and 5V DC power lines.
Functionality	Maintains power lines for system wide use that can push 480mA on each line.

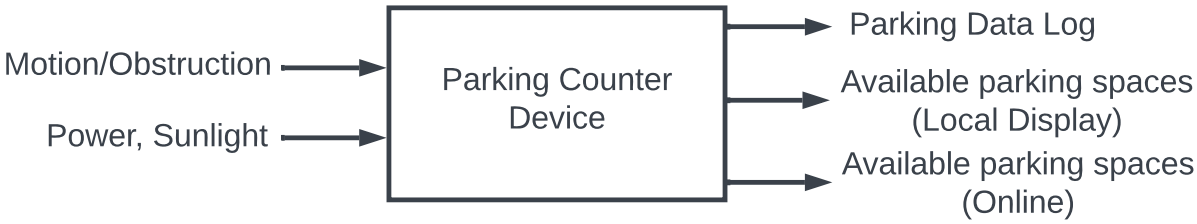
Module	Microcontroller (ESP32)
Inputs	Parking Space Status: IR sensing device outputs a 3.3v signal. 3.3v when space is obstructed, 0v when available/open.
Outputs	Parking Data: Number of available parking spaces with time stamp. LCD Control Commands: Sets up LCD and writes data to be displayed on the screen. Parking Spot Availability: Periodically refreshed current parking spot availability.
Functionality	Takes the readings from the IR Sensors to update the count of the number of taken parking spaces on the connected output devices.

Module	SD Card
Inputs	Parking Data: Number of available parking spaces with time stamp.
Outputs	Parking Data Log: List of times with their corresponding measured number of parking spaces available.
Functionality	Logs parking data and time stamps.

Module	LCD Screen
Inputs	LCD Control Commands: Sets up LCD and writes data to be displayed on the screen.
Outputs	Available parking spaces (Local Display): The number of parking spaces not yet sensed as being taken displayed on hardware.
Functionality	Displays the number of parking spaces available on-site

Module	Web App
Inputs	Parking Spot Availability: Periodically refreshed current parking spot availability.
Outputs	Available parking spaces (Online): The number of parking spaces not yet sensed as being taken displayed on a Website.
Functionality	Displays the number of parking spaces available on a website

Parking Counter Device: L0 Diagram



Module	Parking Counter Device
Inputs	Motion/Obstruction: Movement or physical obstruction within 15cm from the front of the sensing device(s) Power, Sunlight: Light from the sun (optimally bright, unoccluded, direct sunlight)
Outputs	Parking Data Log: List of times with their corresponding measured number of parking spaces available. Available parking spaces (Local Display): The number of parking spaces not yet sensed as being taken displayed on hardware. Available parking spaces (Online): The number of parking spaces not yet sensed as being taken displayed on a Website.
Functionality	Detect the number of taken parking spaces, log the parking data, and display the current number of parking spaces available on a screen and on a website.