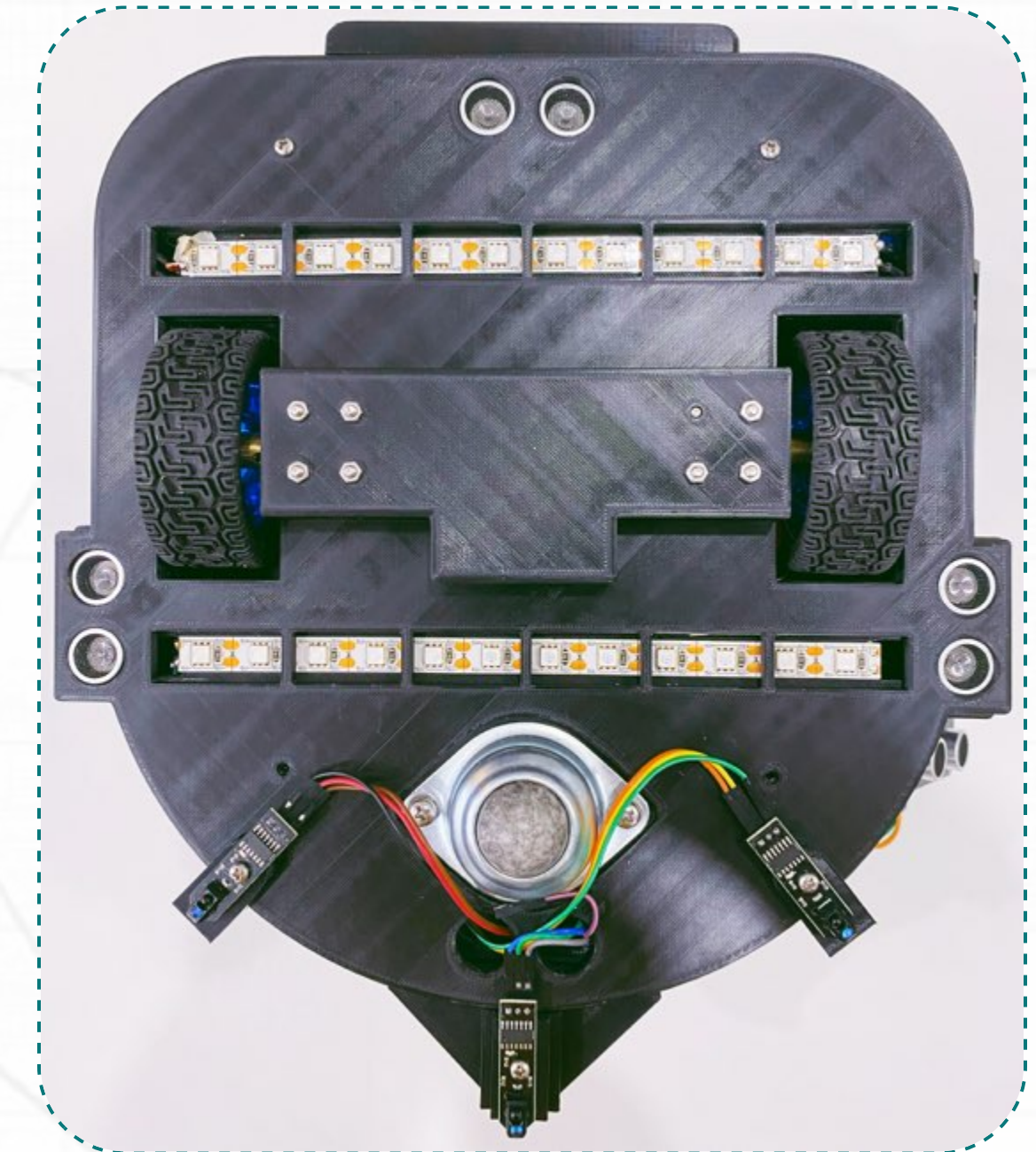


Semi-Autonomous UV-C Disinfection Robot

Ufuoma Aya, Hasin Abrar, Matthew Blinkhorn & Yatrik Pamnani

Features

- ◆ UV-C LEDs that irradiate SARS-CoV-2
- ◆ Identifies and avoids edges
- ◆ Detects motion 5 ft away
- ◆ Provides audio feedback
- ◆ Long lasting battery life
- ◆ Wireless GUI control



PURPOSE

Provide a safe and cost-effective method to disinfect tables and seating areas situated in the Riddell Centre at the University of Regina



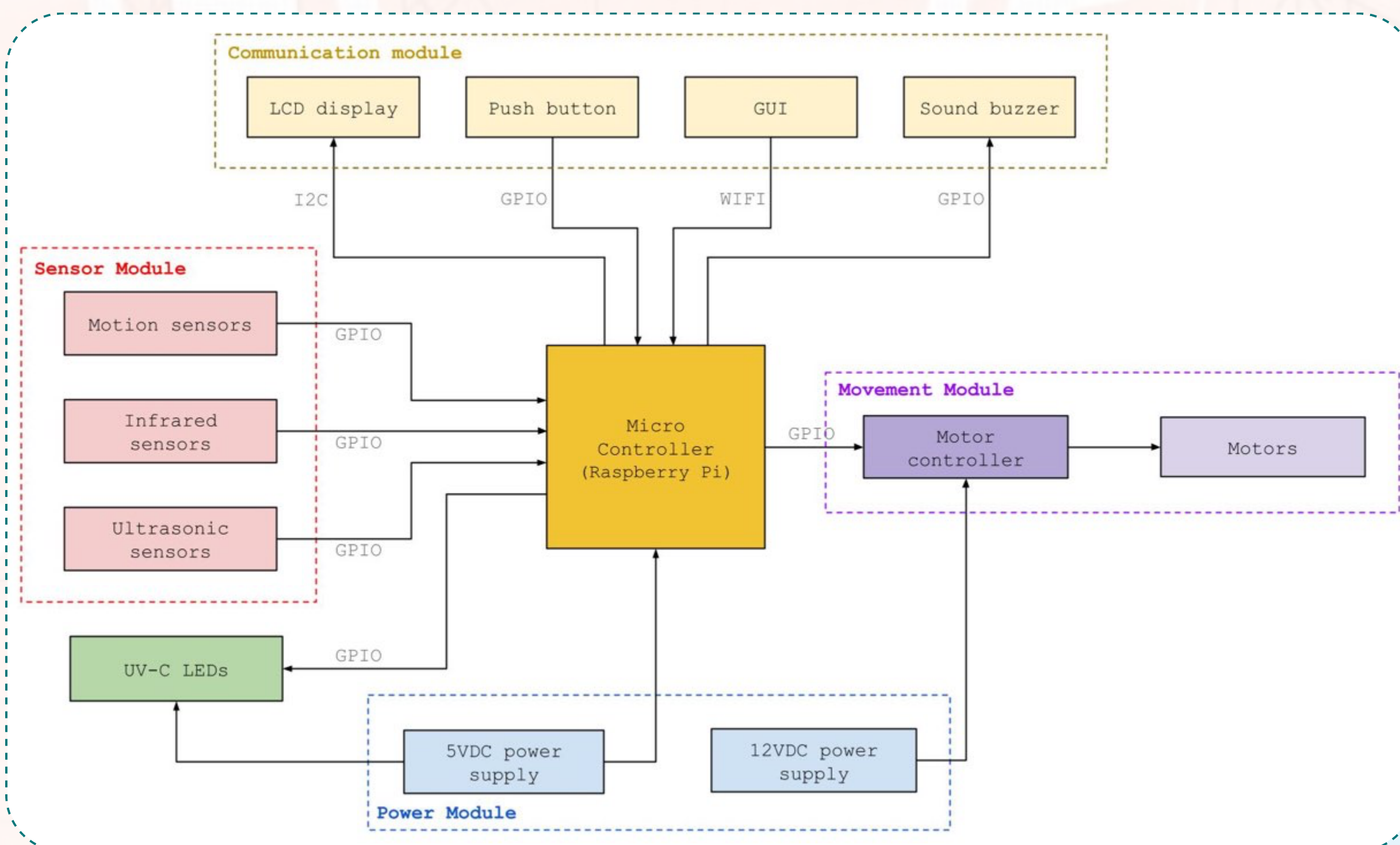
SPECS

- Input voltage: 5 V
- Motor voltage: 12 V
- Detection distance: 5 ft
- Size: 270 x 250 x 128 mm
- Weight: 5.2 lb



OPERATION

After a button press on the GUI or the robot itself, the disinfecting process begins. First disinfecting the perimeter and then proceeding to disinfect the entire surface



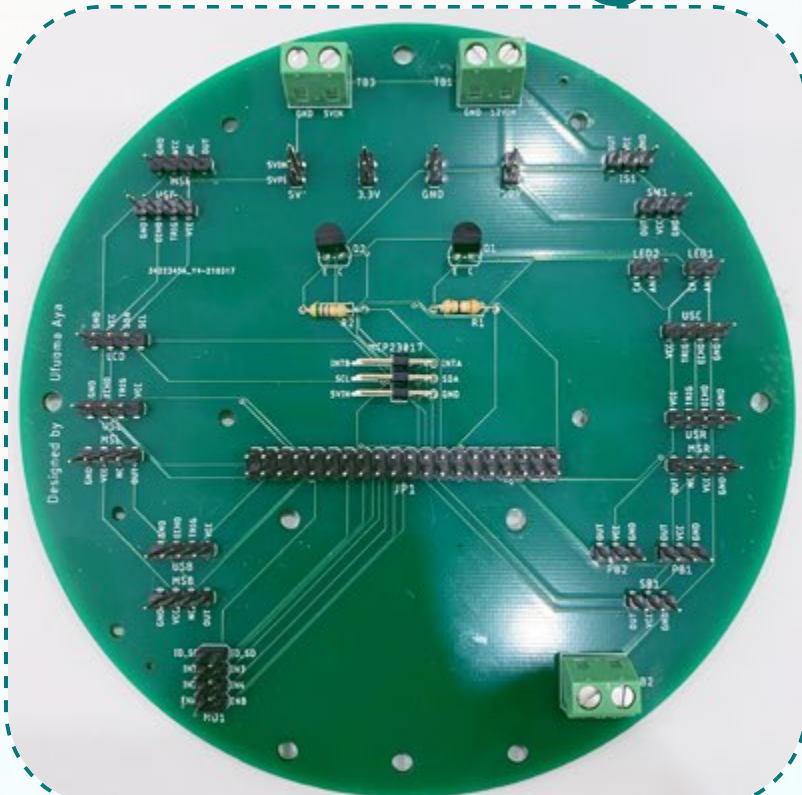
Block Diagram

- Micro-controller: the system's primary processing unit
- Communication module: means of interaction between the system and the end-user(s)
- Sensor module: identifies edge, measures distance between the system & surface and detects motion
- Movement module: controls the speed & direction of each motor independently via PWM signals
- Power module: the system's power supply unit
- UV-C LEDs: disinfectant

Deactivation Times

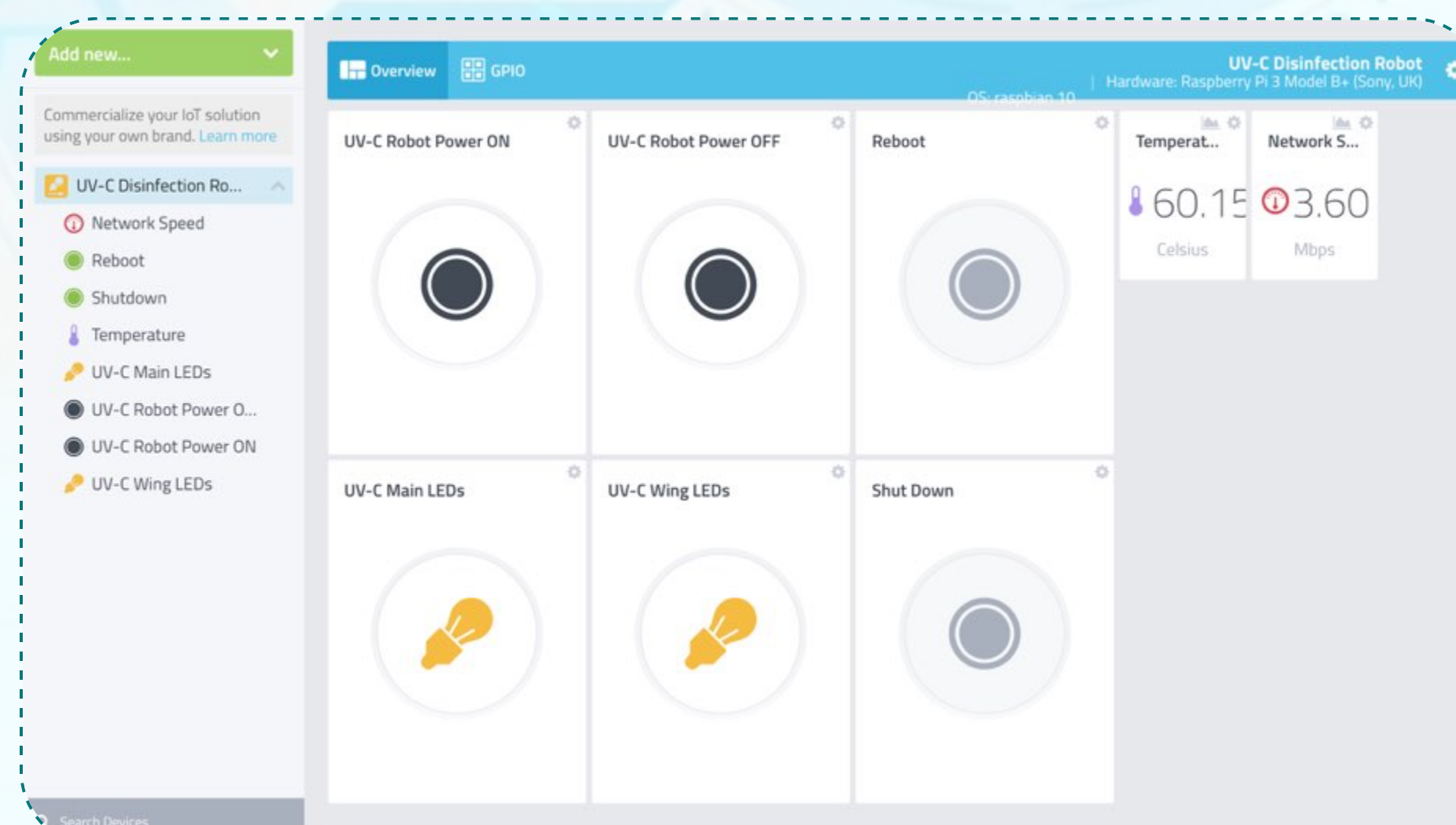
Distance (cm)	Irradiance (mW/cm ²)	Deactivation Time (s) of COVID-19 at 5 mJ/cm ²
1	0.047	106.29
2	0.040	123.69
3	0.011	461.04
4	0.0046	1075.76
5	0.00056	8875

PCB Design



GUI (WiFi)

- Start & stop
- LEDs switch



Chassis Design

