

# SumoBot<sup>mini</sup>

## Demo Functions



### Overview:

- On power-up, the robot is in 'Sensor' mode, it displays battery status and animates its RGB LEDs. Button switches SW0 & SW1 select display features of sensor modes, as well as selecting other modes of operation.
- The duration of either button press, determines the outcome.
- Use with the Display Monitor app to enhance your demonstrations.

### Sensor Mode:

- SW1 short press, select the display data type: battery, MPU6050 motion, LTOF ranging, Wi-Fi status and IR sensors.
- SW1  $\geq$  600 ms press, cycles back through the sensor types.
- SW1  $\geq$  1.2 sec. press, toggles between **Sensor** and **Task** modes.
- SW1 long press, initiates a **RESET** reboot sequence.
- SW0 short press, selects display formats for the selected sensor type.
- SW0  $\geq$  600 ms press, takes you backwards through display formats.
- SW0  $\geq$  1.2 sec. press, toggles between **Sensor** and **Sumo** modes.
- SW0 + SW1 together, enters special calibration routines.

### Sumo Mode:

- It is assumed that the robot is placed on the starting line.
- SW0 short press, will initiate a 5 second count down.
- Pressing SW0 or SW1 will stop this count down sequence.
- Once the count down expires the robot enters competition mode.
- Toppling or pressing either SW0 or SW1 will disable this mode.

# SumoBot<sup>mini</sup>

## Demo Functions



### Task Mode:

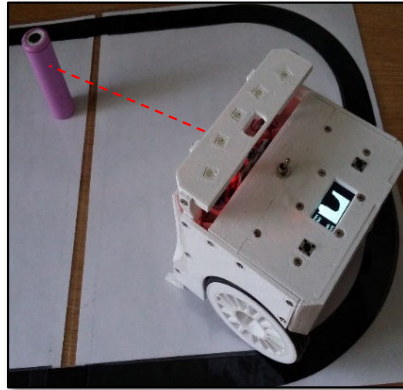
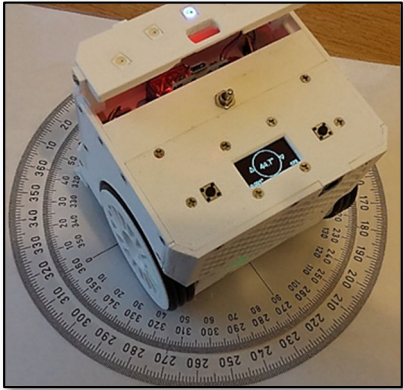
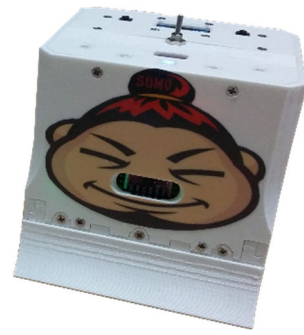
- Selected using SW1 long press. Listed here in order of appearance.
- DRIVE - after 3 sec count AI drives robot within the confines of the ring.
- HUNT - after 3 sec count AI drives robot towards detected targets.
- TIP - AI demonstrates different responses to tipping.
- TARGET - AI demonstrates target detection and response.
- DISTANCE – demonstrates the use of the distance integrators.

### Wii Wi-Fi Mode:

- Holding the Nunchuk 'C' button > 2 sec. takes you into Wii Wi-Fi mode.
- The X/Y joystick can now be used to drive the Sumo robot.
- Holding the 'C' + 'Z' buttons cancels the Wii Wi-Fi mode.
- In Sumo Mode the display will show WiFi and the robot is in complete control by the user and Nunchuk. Edge detection is disabled, so you need to drive carefully.



# Features



## Tech:

- ESP32 microcontroller dual-core 80MHz 32-bit
- 2 x LX-16A digital servo motors
- 5 x IR line tracking/edge sensors
- 5 x RGB programmable LEDs
- MPU6050 3-axis gyro & accelerometer (250rps)
- 128x64 OLED display
- 2 x 18650 rechargeable high capacity batteries
- 3-D printed construction

## Features:

- All functions accessed via 2 button switches
  - Left - selects displays
  - Right - selects Sensors and Tasks
  - Both - together control Sumobot fighting
- Safe start, auto-calibration with LED indicators
- Battery monitoring and remaining charge prediction
- Laser range finder mounted on a pan servo
- MPU6050 detects tilt, collisions and rotations
- Black or white border detection
- Displays 5 second count-down prior to starting
- 2.4GHz WiFi control, using custom Wii transceiver

