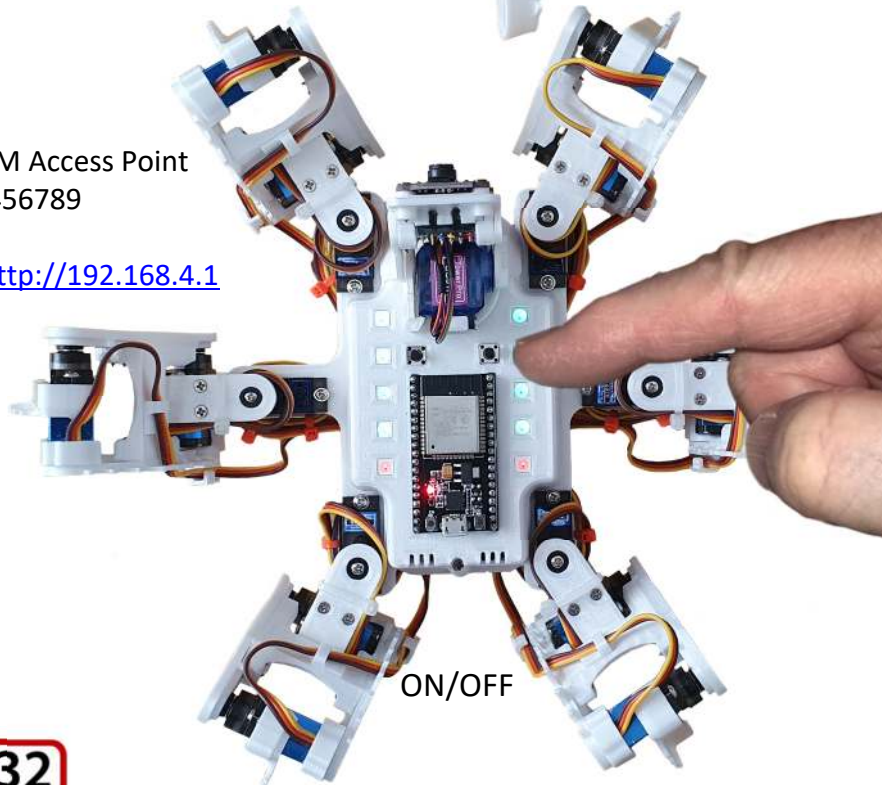
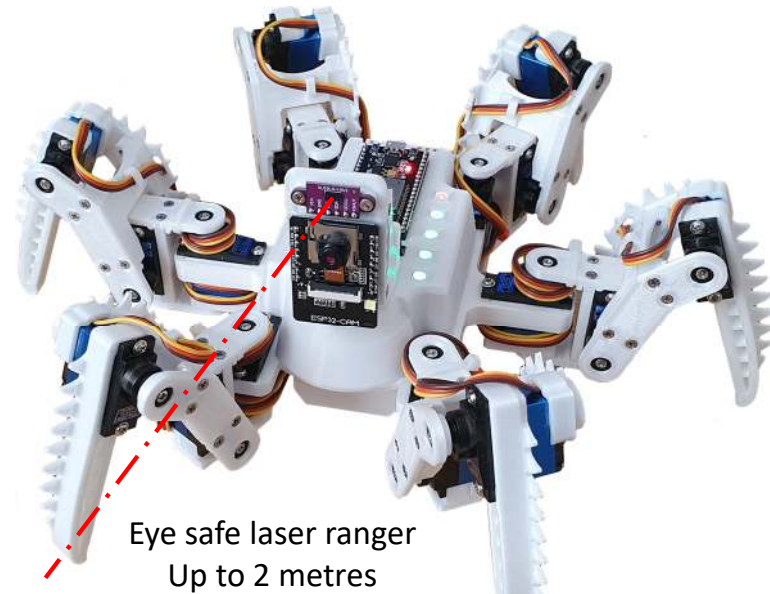


SpidaBot – Button Functions



Connect using:
SSID: ESP32-CAM Access Point
Password: 123456789

Browser URL: <http://192.168.4.1>

Tech:

- ESP32 microcontroller
- 20 x Servo motors
- VL53L0X TOF laser range finder
- 2.4GHz ESP-NOW wireless control
- 10 RGB LEDs – battery monitoring/motion
- 2 x 3.7v 3000mAh batteries
- 3-D printed construction

Features:

- Safe start, with LED blink sequence.
- A button press will cause it to stand up, in ranging mode, and respond to further button presses.
- 1 - LEDs display laser ranging
- 2 - backs away from approaching objects
 - - returns to start point after 5 seconds
- 3 - target tracking at a fixed 20 cm distance
- Battery Low sensing with cut-off.
- ESP32 RESET button returns it to safe mode.

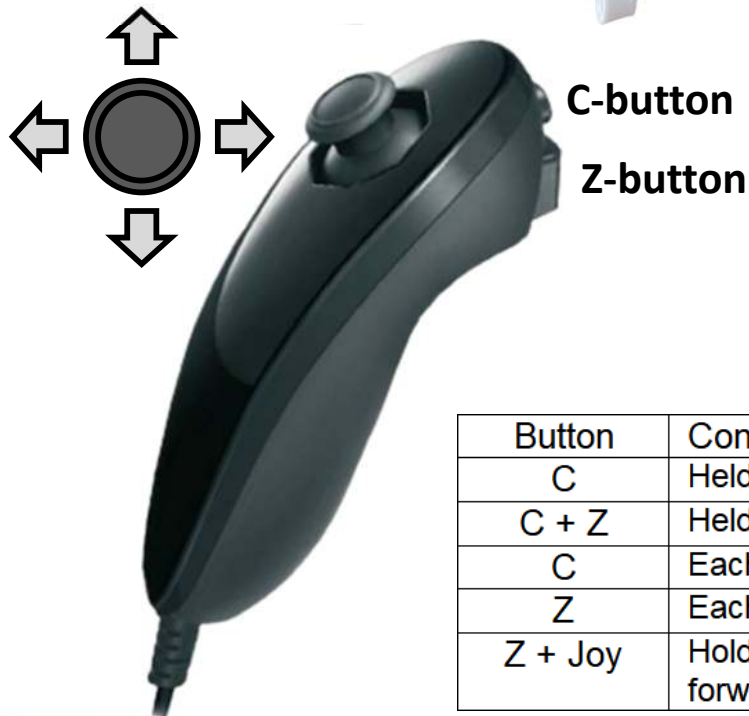
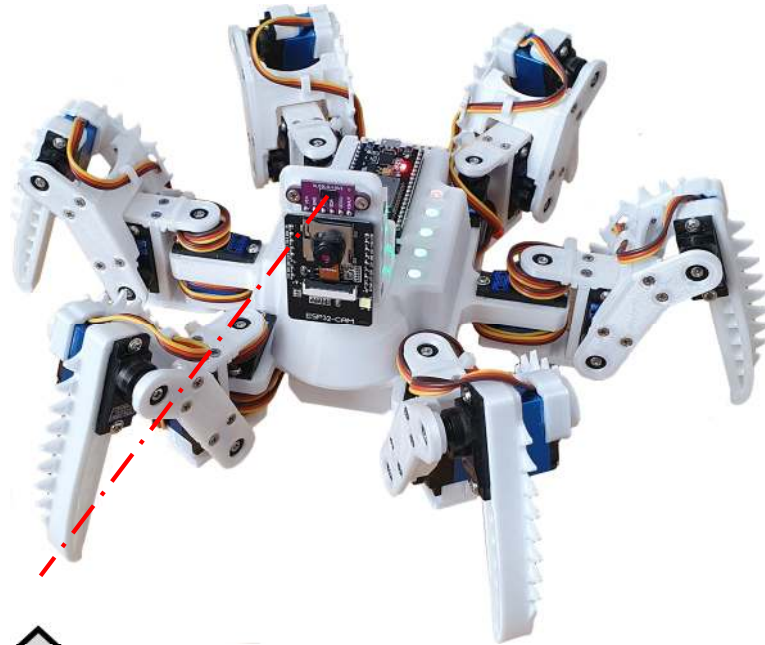
Enhancements:

- Scope within coding.

In Use:

- Legs will initially pull in when power is applied.
- Switch power OFF when not in use.

SpidaBot – RC Demo Functions



Tech:

- ESP32 microcontroller
- 13 x Servo motors
- VL53L01X TOF laser range finder
- 2.4GHz wireless control
- 64 x 128 OLED display
- 2 x 3.7v 3000mAh batteries
- 3-D printed construction

Features:

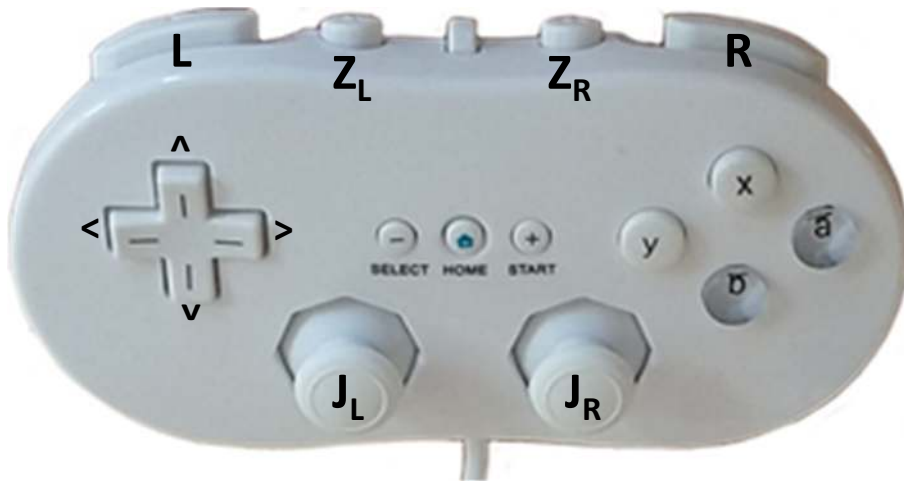
- Safe start, with LED indicators
- Controlled via Wii Nunchuk
- Walks and turns in both directions
- Performs pre-set moves – bow and wave
- Variable speed motion
- Display modes
- Battery Low sensing with cut-off
- Data can be returned via the wireless link

Enhancements:

- None.

Button	Conditions and responses
C	Held initially for > 1 second to make the robot stand and become 'active'.
C + Z	Held for > 2 seconds will return the robot to an 'inactive' safe state.
C	Each press will increase the responsiveness of the robot from 1 – 5 (max).
Z	Each press will decrease the responsiveness of the robot from 5 – 1 (min).
Z + Joy	Holding Z will change the right/left walking modes from turning to walking sideways, forwards will become a 'bow' and reverse will become a 'hello wave'.

SpidaBot – Wii Classic Functions



I2C register 6 byte map:

Bit								
7	6	5	4	3	2	1	0	
RX<4:3>				LX<5:0>				RxWiFi[0]
RX<2:1>				LY<5:0>				RxWiFi[1]
RX<0>	LT<4:3>			RY<4:0>			RxWiFi[2]	
LT<2:0>			RT<4:0>				RxWiFi[3]	
BDR	BDD	BLT	B-	BH	B+	BRT	1	
BZL	BB	BY	BA	BX	BZR	BDL	BDU	
							RxWiFi[4]	
							RxWiFi[5]	

LX,LY are the left Analog Stick X and Y (0-63), RX and RY are the right Analog Stick X and Y (0-31), and LT and RT are the Left and Right Triggers (0-31). The left Analog Stick has twice the precision of the right Stick.

BD{L,R,U,D} are the D-Pad direction buttons. B{ZR,ZL,A,B,X,Y,+,H,-} are the discrete buttons. BL{LT,RT} are the digital button click of LT and RT. All buttons are 0 when pressed.

Wii Classic functions:

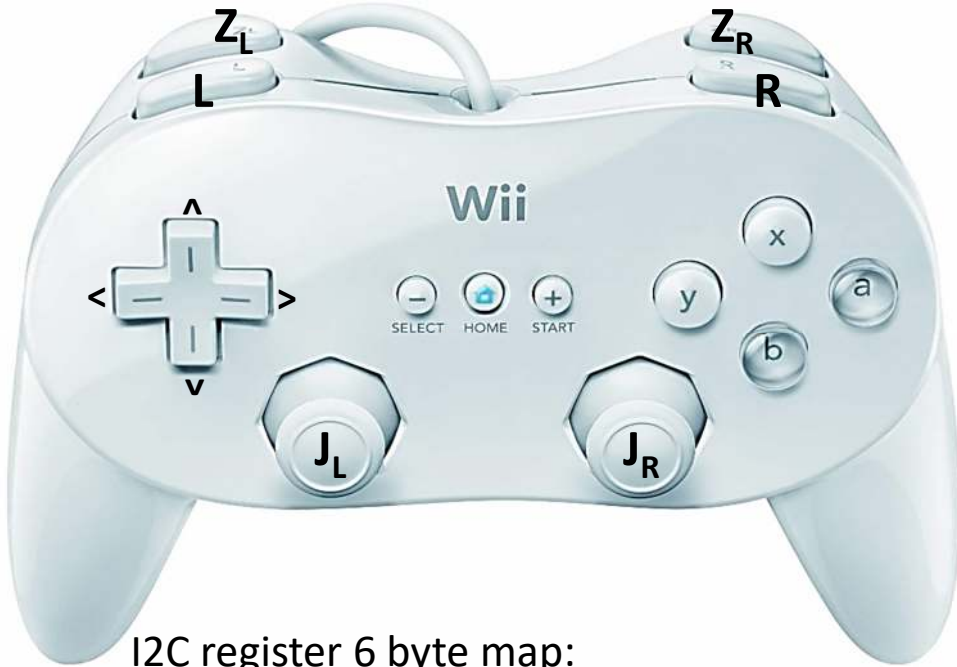
SpidaBot system default is Wi-Fi RC disconnected.

- **R** – held in, will connect SpidaBot over ESP-NOW Wi-Fi.
- **L + R** – held in, will disconnect RC over Wi-Fi.
- momentarily will move robot towards REST.

When connected:

- **R** – increased Gear value, if in full control.
- **L** – decreased Gear value, if in full control.
- **a** – demonstrates a sit and wave movement.
- **b** – demonstrates a bow movement.
- **B+** - (Start) held for 2+ seconds gives full control.
- **J_R** – controls walking actions, forward, back & turn.
- **J_L** – controls camera pan and tilt.
- Digital keypad:
 - **^** - raises the height, when standing or walking.
 - **v** – lowers the height, when standing or walking.
 - **>** - turns on/increases camera LED brightness.
 - **<** - turns off/decreases camera LED brightness.
- **Z_L** – held in, J_R joystick functions to walk sideways.
- **Z_R** – held in, J_R joystick functions change to pitch and yaw.

SpidaBot – Wii Classic Pro Functions



I2C register 6 byte map:

Bit								
7	6	5	4	3	2	1	0	
RX<4:3>				LX<5:0>				RxWiFi[0]
RX<2:1>				LY<5:0>				RxWiFi[1]
RX<0>	LT<4:3>			RY<4:0>				RxWiFi[2]
LT<2:0>				RT<4:0>				RxWiFi[3]
BDR	BDD	BLT	B-	BH	B+	BRT	1	RxWiFi[4]
BZL	BB	BY	BA	BX	BZR	BDL	BDU	RxWiFi[5]

LX,LY are the left Analog Stick X and Y (0-63), RX and RY are the right Analog Stick X and Y (0-31), and LT and RT are the Left and Right Triggers (0-31). The left Analog Stick has twice the precision of the right Stick.

BD{L,R,U,D} are the D-Pad direction buttons. B{ZR,ZL,A,B,X,Y,+,H,-} are the discrete buttons. BL{LT,RT} are the digital button click of LT and RT. All buttons are 0 when pressed.

Wii Classic Pro functions:

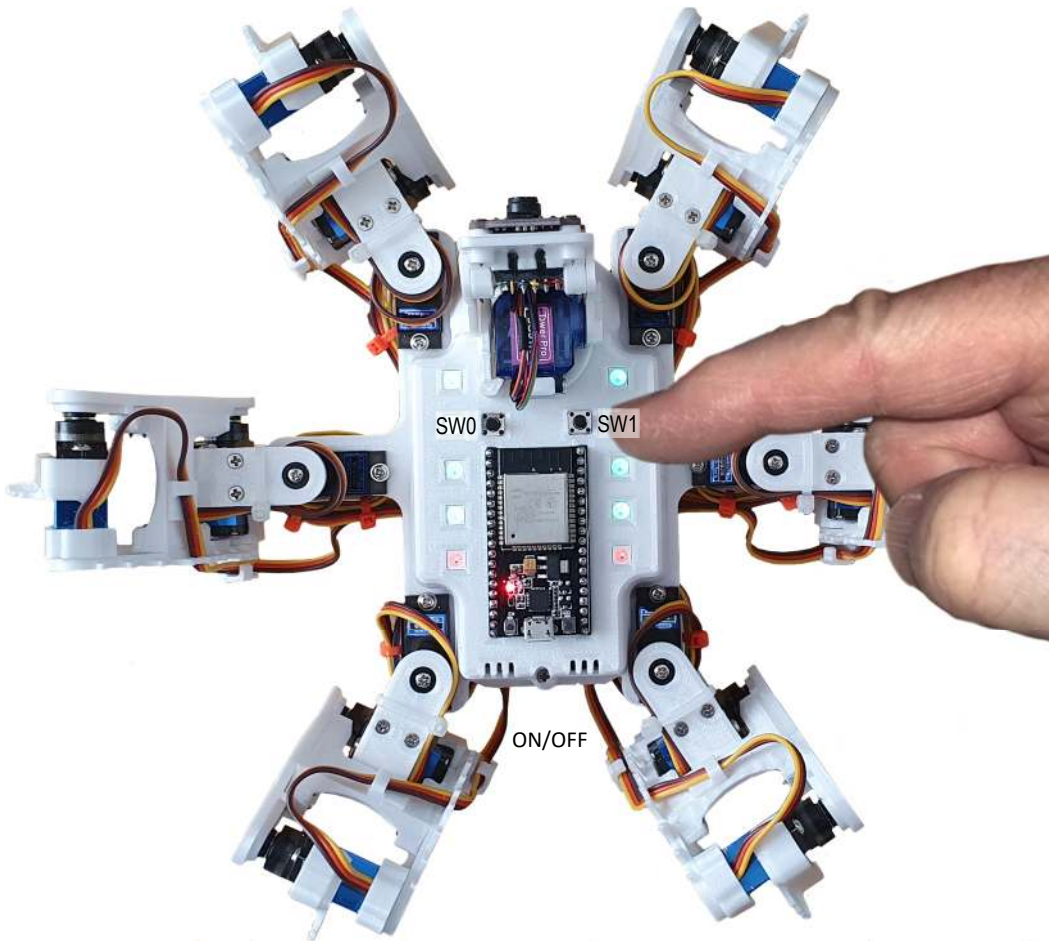
SpidaBot system default is Wi-Fi RC disconnected.

- **R** – held in, will connect SpidaBot over ESP-NOW Wi-Fi.
- **L + R** – held in, will disconnect RC over Wi-Fi.
- momentarily will move robot towards REST.

When connected:

- **R** – increased Gear value, if in full control.
- **L** – decreased Gear value, if in full control.
- **a** – demonstrates a sit and wave movement.
- **b** – demonstrates a bow movement.
- **B+** - (Start) held for 2+ seconds gives full control.
- **J_R** – controls walking actions, forward, back & turn.
- **J_L** – controls camera pan and tilt.
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- **Z_L** – held in, J_R joystick functions to walk sideways.
- **Z_R** – held in, J_R joystick functions change to pitch and yaw.

SpidaBot – TEST mode



TEST Tech:

These special test modes should only be performed with SpidaBot on its stand.

Holding down either SW0 or SW1 button switches, whilst resetting the micro, will take the code into TEST mode, in which all servo values will be set initially to their respective 'Cal' values, which will pull in the legs to their rest positions, wait for the legs to do this, and the LED battery colour will be blue.

SW0 functions:

- Briefly pressing SW0 toggles the TEST mode display options, which are different to normal mode.
- If SW0 is held down the legs will go into a movement demo mode in which they swing through their angular limits.
- If SW0 is held down again the legs will go into a walking demo mode in which they walk slowly forward.
- If SW0 is held down again the legs will return to their default, rest positions.
- Repeating the SW0 actions will toggle between the respective modes.

SW1 functions:

- Briefly pressing SW1 toggles the laser range finder ON/OFF, changes the LED mode to suit, and sets the display monitor to ranging.