**Robot car 002**

**Description**

This robot car is based on the ESP 32 cam board developed by Espressif inc. It uses the on board WiFi for wireless communication between the board and any connected device. The WiFi mode used is the Soft Access Point mode which allows the ESP 32 cam to set up a server and other devices can connect. The controls are sent to the board using the web-socket created along with the HTML page, the same page which the live stream from the ESP 32 camera is sent to.

**Hardware**

1. ESP32 cam board - 1x
2. SSD1306 OLED display - 1x
3. L298N motor driver module - 1x
4. 18650 batteries - 2x
5. 18650 battery pack - 1x
6. Home made 4 wheeled car chassis - 1X
7. Geared motors - 4x
8. Mini breadboard - 1x
9. Jumper wires

**Software**

1. Arduino IDE

**Programming Language:** Arduino

**Lessons learned from challenges**

* There aren't enough usable GPIO pins on the ESP 32 cam, and therefore limited functionality.
* A camera probe error might mean that the ESP 32 cam board is fried. Always test with the esp32camerawebserver example to verify.
* ESP 32 boards can be reset using the Esptool.py or via the web-server.
* If Serial communication is enabled, then the IO1 and IO3 pins (U0R and U0T) shouldn’t be used as general GPIO. This is because the Serial communication uses the TX and RX for UART communication. Therefore, the TX pin will always be high. For this project, I had to turn the Serial communication of by commenting out the line “Serial.begin(115200)”.
* Lastly, the connection is a bit messy as I have used a a breadboard and jumper wires. Moving forward, I’ll make use of perf-boards and soldering in my circuits to as to give my projects a more professional, cleaner look.

**Image**

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