

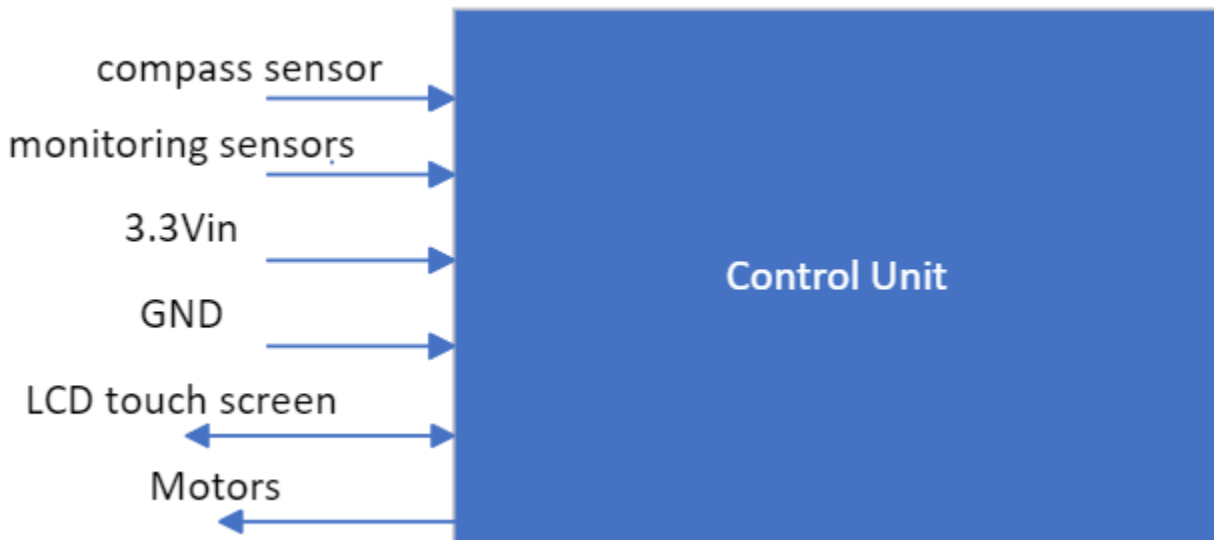
A possible implementation for autonomous mode:

Clock module+electric compass

<https://www.sparkfun.com/products/19155> documents and example code are provided

The clock could be done with the main module even when set to idle (?)

Step motor should be capable of 360-degree rotation (?) -> wiring issues (?)



4 Arduino will be used as the control unit

Functions of each module:

1. Sensor Arduino sends the digital data from the analog sensors to the main
2. Motor Arduino only control the motors
3. WiFi Arduino sends sensor data to the remote dashboard
 - a. Current solution uses SPI
 - b. Need to check if I2C could use the SPI Library
4. The central unit deals with auto mode, emergency shutdown, touch screen, local UI display, and awaking devices from the idle state, other Arduino will be off when not active.


A list of I2C communication codes should be defined (e.g. Motor unit should let the motor rotate counterclockwise by 5 degrees when receiving "rCC5" and send "c" when action is completed so the central unit could record the degrees rotated)

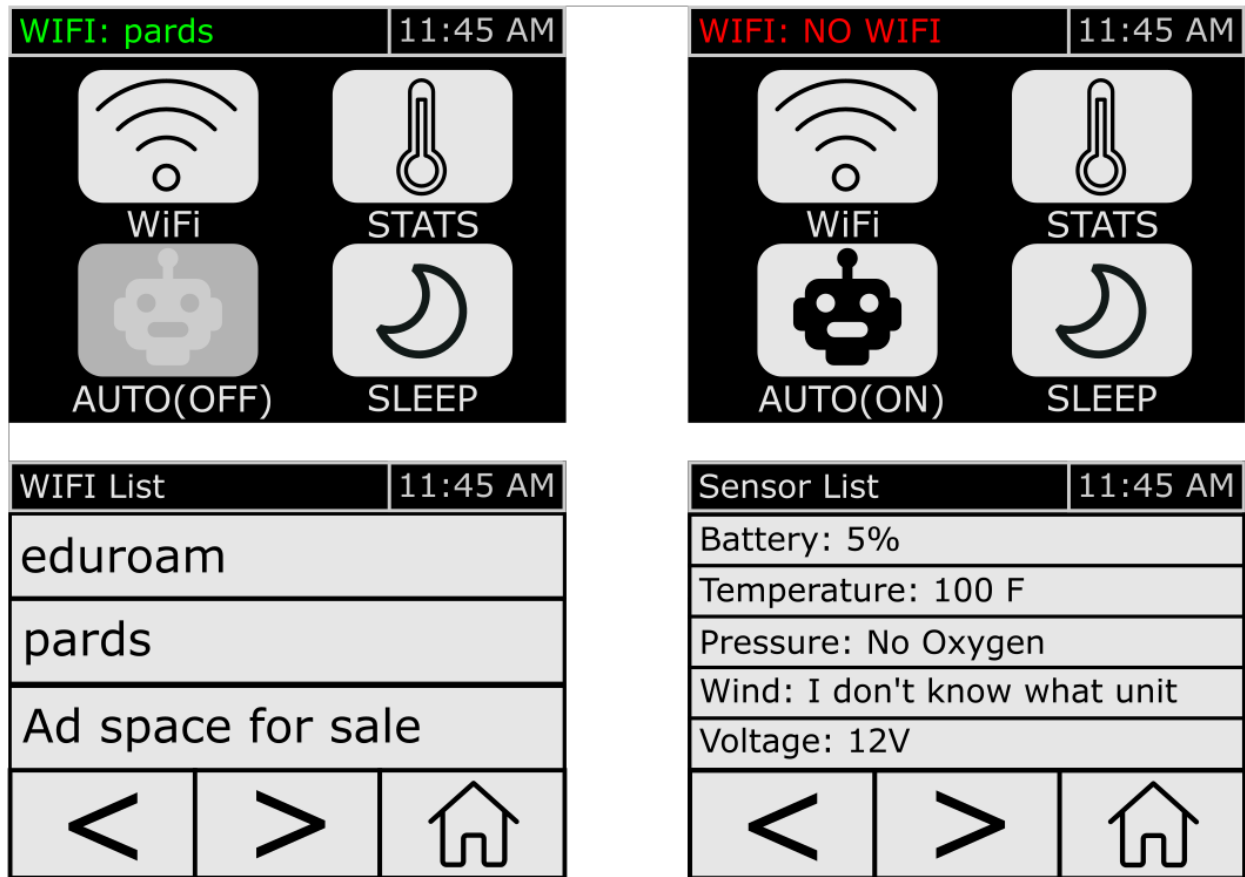
Link for I2C:

<https://create.arduino.cc/projecthub/ronfrtek/arduino-connect-multiple-i2c-devices-7db8b8>

For UI:

The start screen should have the buttons leading to the following pages:

1. WiFi connection setup
 - a. Display the available WiFis
 - b. Choose the WiFi (assume that we connect to pards so we do not need to deal with a virtual keyboard, let us set it as a later function)
 - c.  [Arduino Nano 33 IoT - Getting Started](#)
2. Sensor data monitor
3. Auto mode on/off
4. Entire system on/off (would also like a physical button for that)
5. https://github.com/moononournation/Arduino_GFX
6. <https://www.arduino.cc/reference/en/>
7. Currently they only have adafruit touchscreen driver, I assume the safe bet is to go with adafruit touchscreen
8. Icons could be done using bitmap function



Things to think about:

An extra storage needed (what if it is offline for 6 months, what do we do with the metrics data?)

Concurrency of the step motor direction and compass direction (will the rotation of step motor be recorded when the thing is off?)

When WiFi is off

