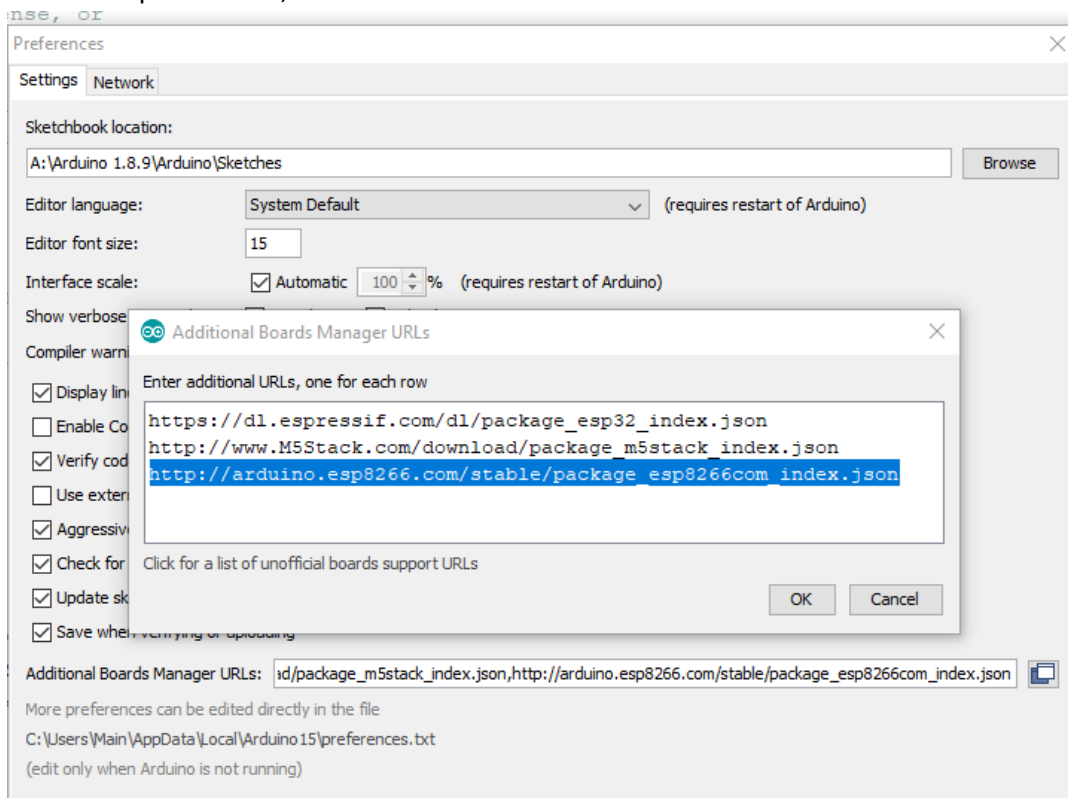# Nicks method to set up an ESP8826 (ESP-01S 'S Series) WiFi gateway

The printer now serves it's own web page onto my home network and allows me to control and monitor the printer from anywhere. BIG bonus is that I can connect and disconnect from the printer, during a print job, without having the control board reboot itself and ruin the print job mid way through. In past I tried connecting a computer and also a raspberry pi (running Octoprint) to my printer and there is a very high chance that - at some stage during a 10hour print – it looses serial connection and cause a board reboot.

Not bad for $2

1. **Watch** Add WiFi To Your 3D Printer For $5!!! - ESP8266 - LUC ESP3D - Chris's Basement FIRST
   https://www.youtube.com/watch?v=pJGBRriNc9I
2. **Read** https://github.com/luc-github/ESP3D/wiki/Install-Instructions
3. Make sure you can access https://github.com/luc-github/ESP3D
4. Install Arduino 1.8.5
5. In Arduino preferences, add a new URL

   http://arduino.esp8266.com/stable/package_esp8266com_index.json
6. In Arduino install drivers for the WSP8266 board

7. Download the Githib project to suit Arduino 1.8.5 and WSP8266 library 2.4.0
   https://github.com/luc-github/ESP3D/releases/tag/1.0

Stable version (ESP8266 only):

Arduino ide 1.6.5 with stable 2.0.0 from ESP8266, please use https://github.com/luc-github/ESP3D/releases/tag/v0.5.1

Arduino ide 1.6.8 with stable 2.2.0 from ESP8266, please use https://github.com/luc-github/ESP3D/releases/tag/v0.6.2

Arduino ide 1.8.5 with stable 2.4.0 from ESP8266, please use https://github.com/luc-github/ESP3D/releases/tag/1.0

`build` `passing`

Arduino ide 1.8.5 with with 2.5.2 version of ESP8266 and git version of ESP32, please use https://github.com/luc-github/ESP3D/releases/tag/2.0 `build` `passing`

Development version for 2.1 & ESP-WEBUI (2.1 branch):

Arduino ide 1.8.9 with 2.5.2 version of ESP8266 or git version ESP32 for 100% support of ESP32 : `build` `passing`

8. And then put the unzipped project in the Arduino sketches folder

Name	Date modified	Type	Size
ESP3D-1.0	23/08/2019 6:55 PM	File folder	

This PC > Mirror Disks (A:) > Arduino 1.8.5 > Arduino > Sketches

9. Set up Arduino board as:
   a. Generic ESP8862 Module
   b. Flash size 1M (512K SPIFFS)
   c. Flash 40MHz
   d. Baud 115,200

The above suits the below (which I got by interrogating the ESP-01S by loading the program as described in https://github.com/luc-github/ESP3D/wiki/Flash-Size)

Open the Arduino IDE

Click File, Examples, ESP8266, CheckFlashConfig

Upload the sketch to the ESP8266

View the Serial Monitor (115200 baud)

(NB: If you dont get a 'Flash Chip configuration ok.' uploading will appear to work succesfully but the chip will crash on startup and never show an access point / serial output)

```
Flash real id:   00146085
Flash real size: 1048576 bytes

Flash ide  size: 1048576 bytes
Flash ide speed: 40000000 Hz
Flash ide mode:  DOUT
Flash Chip configuration ok.
```

10. Download the tool - this allows Arduino to upload the file system to the ESP-01S (as distinct from the program itself). The file system is used by the webserver – I think
https://github.com/esp8266/arduino-esp8266fs-plugin/releases/download/0.4.0/ESP8266FS-0.4.0.zip

11. Then extract the folder ESP8266FS and put it in the Arduino Tools folder

This PC > Mirror Disks (A:) > Arduino 1.8.5 > Arduino > tools

Name	Date modified	Type	Size
ESP8266FS	23/08/2019 6:35 PM	File folder	
Mangler	29/11/2018 8:15 PM	File folder	
WiFi101	29/11/2018 8:15 PM	File folder	
howto.txt	3/10/2017 12:37 AM	Text Document	6 KB

12. Now check that you can see is the Arduino IDE, under Tools tab a new item 'ESP8826 Sketch Data Upload'. We will use this after sending the program to the chip

13. Set up a FTDI (USB to TTL) interface, making sure it is 3.3V not 5v type

14. Connect up the ESP-01S
    a. Connect FTDI Tx to ESP-01S Rx
    b. Connect FTDI Rx to ESP-01S Tx
    c. Connect FTDI and ESP-01S grounds together and to an external 3.3V supply ground
    d. Connect FTDI and ESP-01S 3.3V input pins to the external 3.3V supply +ve side
    e. Connect ESP-01S IO0 pin to ground
    f. Connect ESP-01S RESET pin to 3.3V
    g. Connect ESP-01S ENABLE pin to 3.3V
15. Connect FTDI USB port to the PC
16. Turn on 3.3V supply
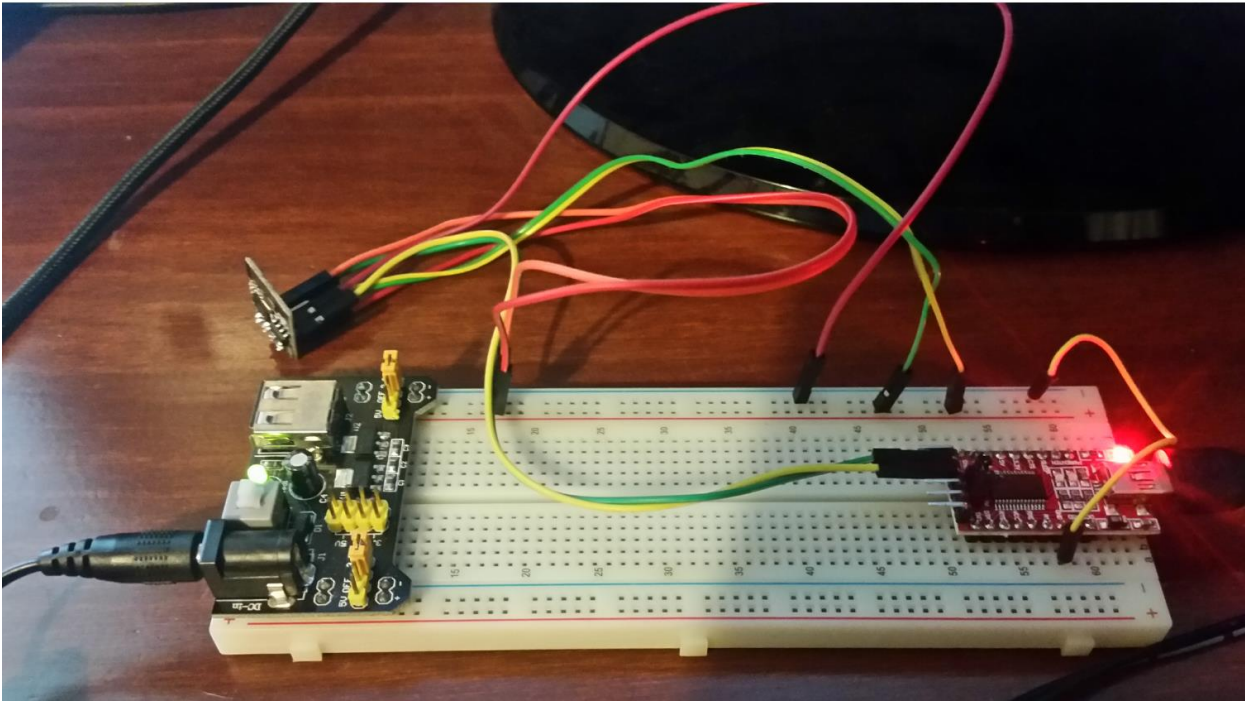
17. Check you can compile the project (ie open file esp3d. ino) in Arduino 1.8.5

18. Load the program to the ESP-01S (check you have set IO0 pin to ground, and the enable and reset pins to 3.3V so this will work). If successful you should see

19. Reboot board and the load the filesystem (see 12 above). If successful you should see

```
.......................................................[ 100% ]
[SPIFFS] data     : A:\Arduino 1.8.5\Arduino\Sketches\ESP3D-1.0\esp3d\data
[SPIFFS] size     : 512
[SPIFFS] page     : 256
[SPIFFS] block    : 8192
/404.htm

/favicon.ico

/index.html.gz

/macrocfg.json

[SPIFFS] upload  : C:\Users\Main\AppData\Local\Temp\arduino_build_155641/esp3d.spiffs.bin
[SPIFFS] address  : 0x7B000
[SPIFFS] reset    : ck
[SPIFFS] port     : COM31
[SPIFFS] speed    : 115200

Uploading 524288 bytes from C:\Users\Main\AppData\Local\Temp\arduino_build_155641/esp3d.spiffs.bin to flash at 0x0007B000
......................................................... [ 15% ]
......................................................... [ 31% ]
......................................................... [ 46% ]
......................................................... [ 62% ]
......................................................... [ 78% ]
......................................................... [ 93% ]
.............................                            [ 100% ]
```

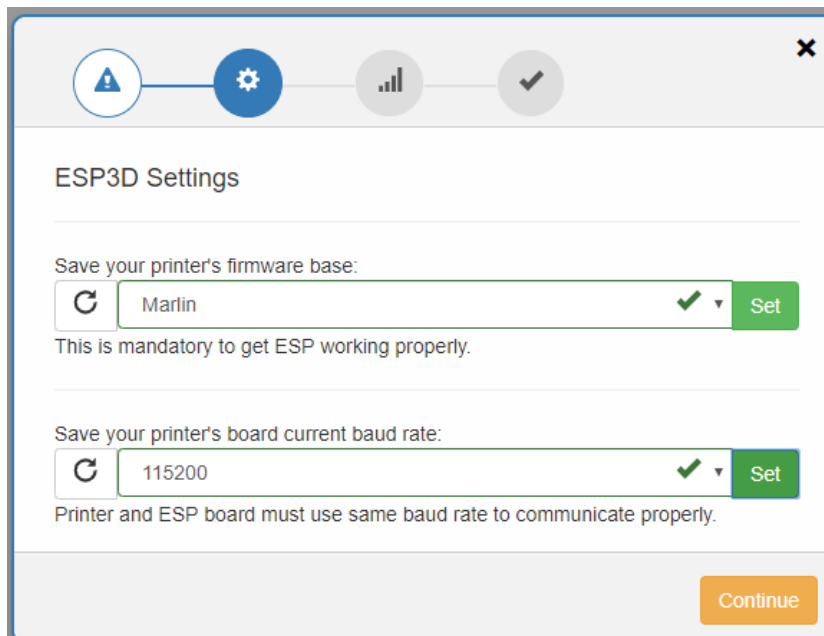20. Now connect ESP-01S IO0 pin to 3.3V to get out of programming mode and reboot the ESP-01S
21. If you look the the Arduino serial monitor you should see M117 192.168.0.1
22. Unplug USB and FTDI (no longer needed) and on the PC check for a new WiFi network SSID ESP3D
23. Log into this with password 12345678
24. You should then see the UI setup page. Go ahead and run though steps (pretty obvious)
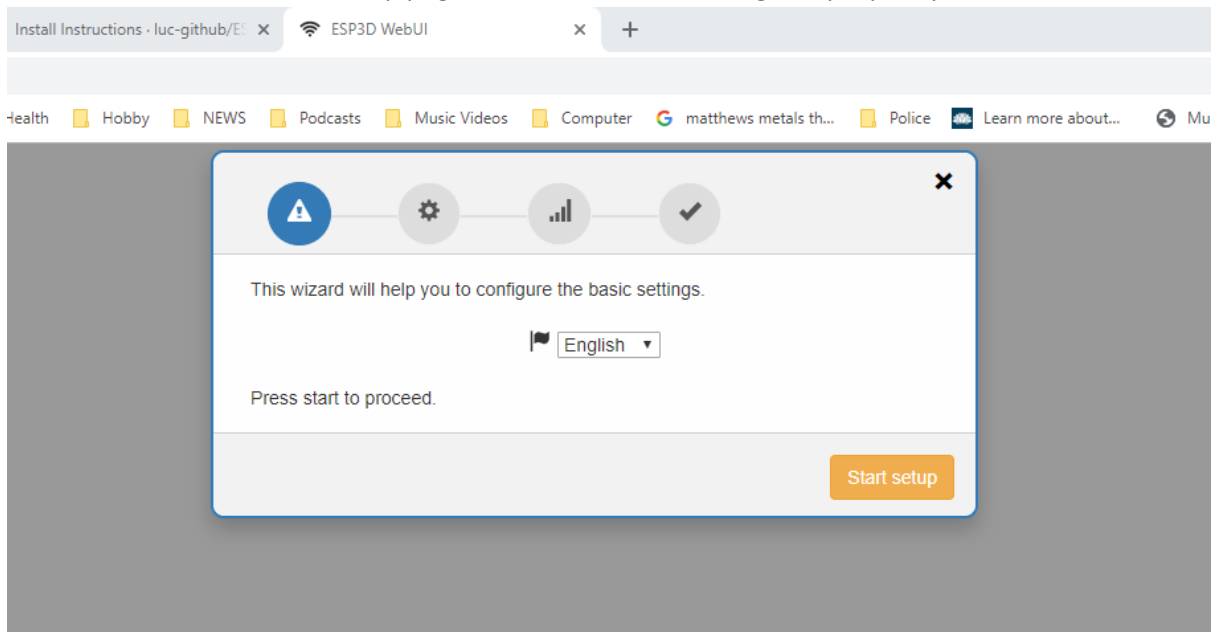
Etc etc

25. Should now get access to the UI. Pretty intuitive to use and configure
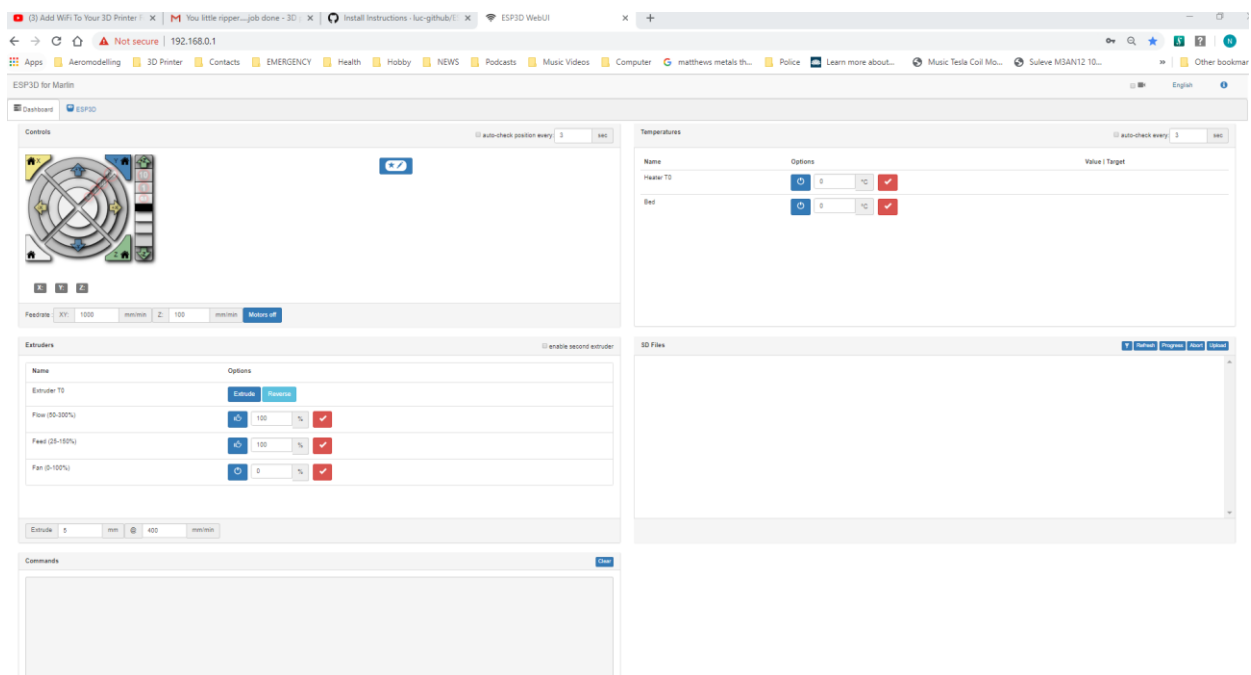
26. Last step – depower and unplug jumper wires. Plug the ESP-01S into the BTT 32bit board and power up. Gives you WiFi access without risk of having the board do a reboot ½ way thorough a print – the way it does if you connect a serial host in the middle of a print job.

References:

https://www.youtube.com/watch?v=pJGBRriNc9I

https://github.com/luc-github/ESP3D

https://github.com/luc-github/ESP3D/wiki

https://github.com/luc-github/ESP3D/wiki/Install-Instructions

https://github.com/esp8266/Arduino/blob/master/doc/filesystem.rst#uploading-files-to-file-system