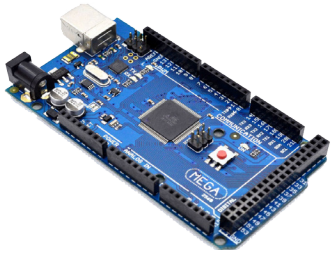
Arduino based TFT Touchscreen PixelStick alternative

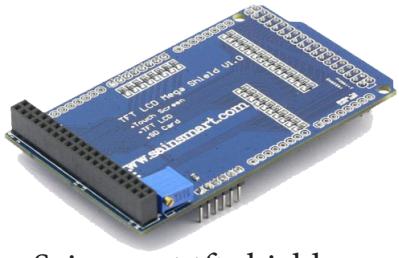
After building and playing with Michael Ross's fantastic DLW (Digital Light Wand) project I have been asked a number of times to help others make one so I thought about upgrading mine from the common challenges most light painters have with their kit including the PixelStick. With this in mind I decided on a TFT Touchscreen which can give alot more information to the user like resolution etc (and a later date show the Bitmap as one you have alot of 8.3 format files you soon can get confused).

Shopping list

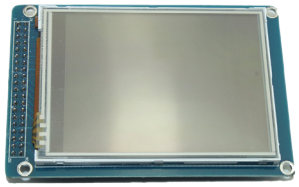
The following list in the bare minimum you need in order to create this project.



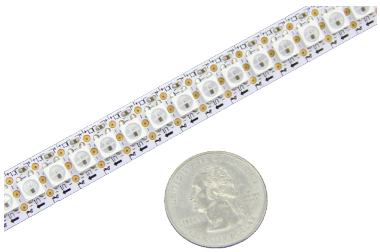
Arduino Mega 2560



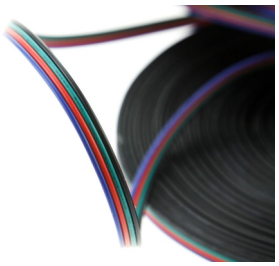
Sainsmart tft shield



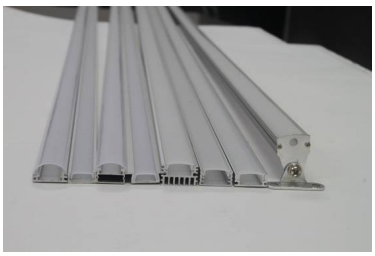
3.2" TFT Touchscreen with SD Reader



WS2812b 144 LEDs per meter strip



4 PIN LED RGB Extension Connect Wire



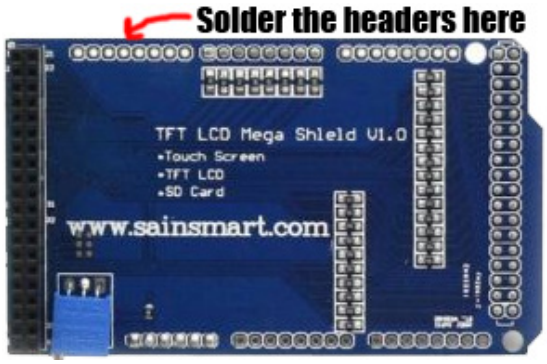
Aluminuim LED Profile

Header Pins

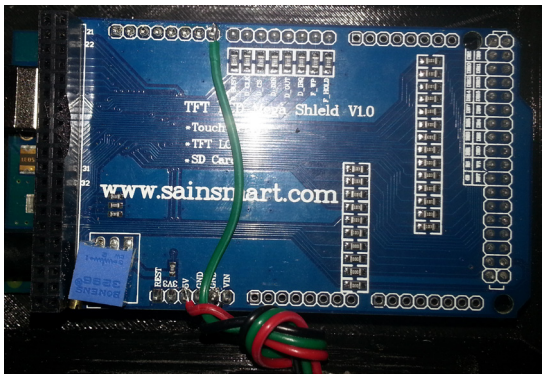
NOTE: No case has been looked at as I have a 3D printer and made my own, if you have a printer or would like the STL (or CAD) files please let me know and I will gladly supply them.

Hardware Build

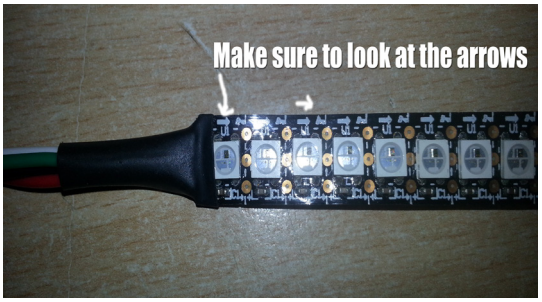
So the first thing we need to do is solder the header pins to the TFT Mega Shield in order to connect the middle wire for the WS2812 strip.



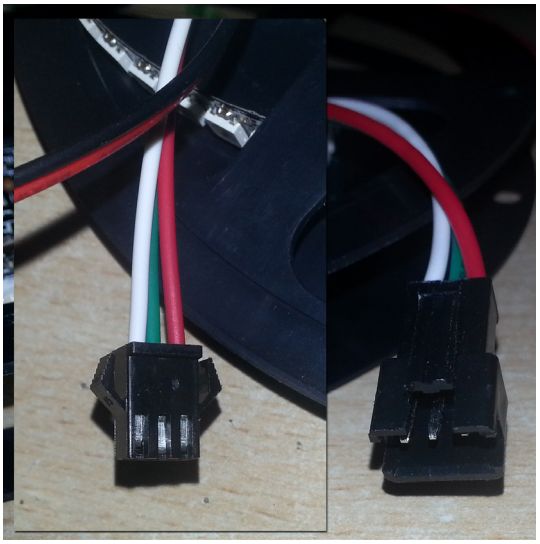
NOTE: We only need pin 8 for the strip but think soldering them all will give more stability for the shield when attached to the Mega2560



Take the 4 wires and cut to your desired length (approx 1m), strip the blue wire from the strand and you should be left with a Red, Green and Black. Cut and strip the wires and solder the Green wire on Pin 8, the Red wire on +5 and Black wire on GND



Make sure when you are wiring up the LEDs in the right direction (Arrow pointing to the right).



Nearly all RGB strips have connectors on both ends of the strip. Locate and remove the connector from the end of the strip and this will be soldered to the wire that is now connected to the TFT Shield.

Red --> Red
Green --> Green
Black --> White

This will now act as connector for the RGB Strip.

Heatshrinking the solder is advisable.

The next part is real simple.

Plug the TFT Shield into the Arduino Mega 2560
Plug the TFT Screen into the Shield
Stick the WS2812b RGB LED strip to the Alluminium profile.
Plug the WS2812b RGB LED strip to the end the the wire that is connected to the TFT Shield.

Software Build

Now the hardware build is complete (minus your personal choice of case) you need to load the libraries and code into the Arduino IDE.
If you have not already install the Arduino software and its set of default libraries

http://www.arduino.cc/
and click on the Download menu link

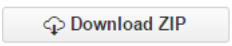
Now this is installed we need to add additional libraries.

Henning Karlson has written some brilliant TFT libraries for TFT touch displays and we are going to use some of them. Navigate to the URL below and download load the following libraries.

http://henningkarlsen.com/electronics/library.php
Expand the Arduino option on the left and download...

UTFT
UTouch
UTFT_Buttons

One list library to download is Adafruit's NEOPixel library.

https://github.com/adafruit/Adafruit_NeoPixel
Click on the 

Icon on the right

Once you have downloaded the libraries open the Arduino IDE program and select

Sketch / Import Library / Add Library ...

Navigate to the folder you downloaded the above libraries and install them one at a time repeating the above step.

Open my LEDStick.INO file and upload to the Arduino.

You should now have a working LEDStick!