Sketching with Hardware

07: Libraries & NeoPixel

Day 3: Wednesday, xx.yy.

09:00 Libraries & NeoPixel

11:00 Electronics 03

12:00 *Lunch Break*

13:00 Sensors & Actors

16:00 Demos

17:00 End

Arduino Libraries

- Expand the functionality of the Arduino
- Arduino is an open platform
- Many compatible products from different manufacturers
- Libraries for easier integration of those components

Examples for Libraries

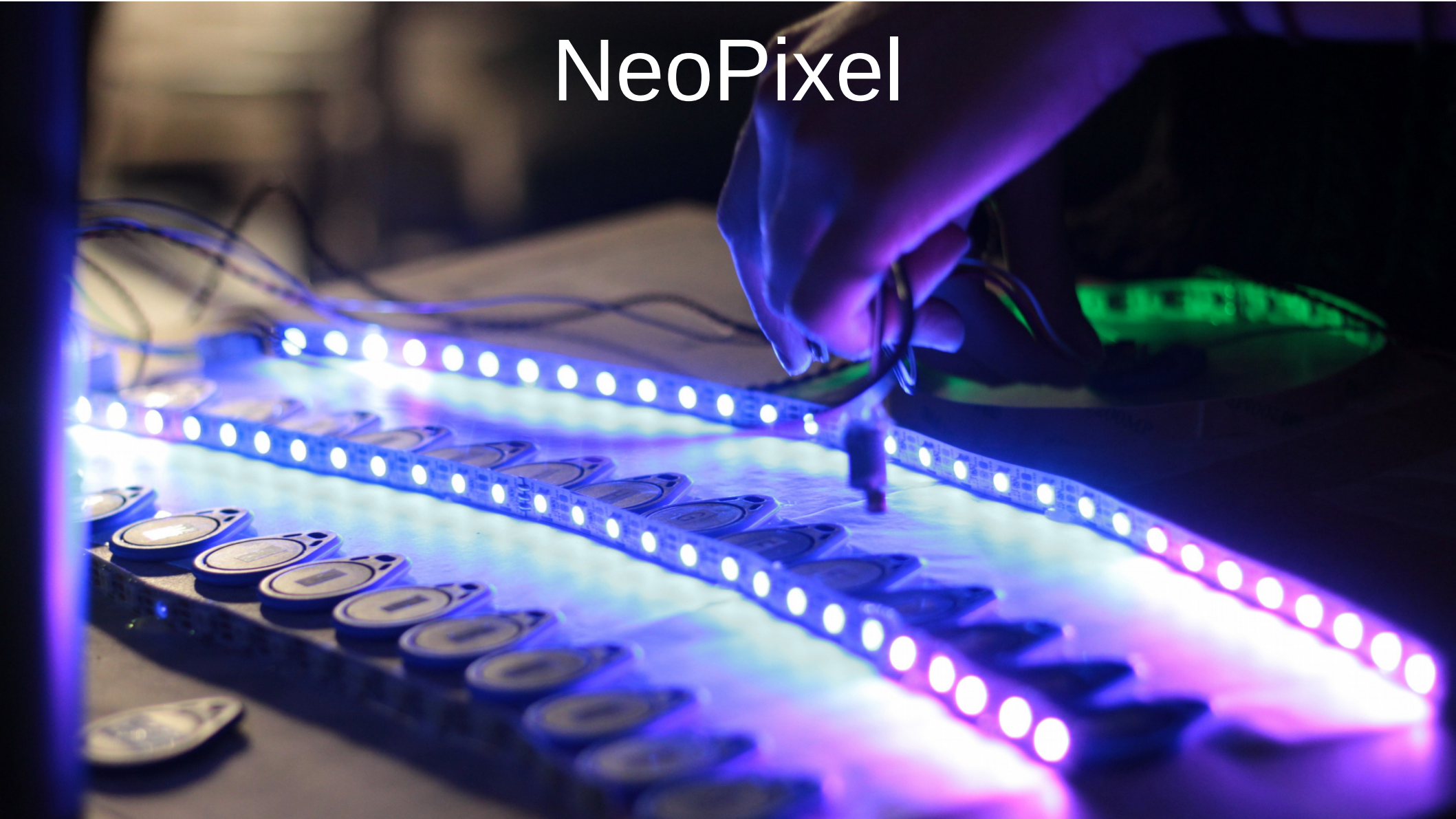
- **Memory** (EEPROM, SD)
- **Networking** (Ethernet, GSM, WiFi)
- **Protocols** (SPI, SoftwareSerial)
- **Output** (LCD, TFT, Keyboard)
- **Signal processing** (debouncing, FFT)

Installing Libraries

https://www.arduino.cc/en/Guide/Libraries

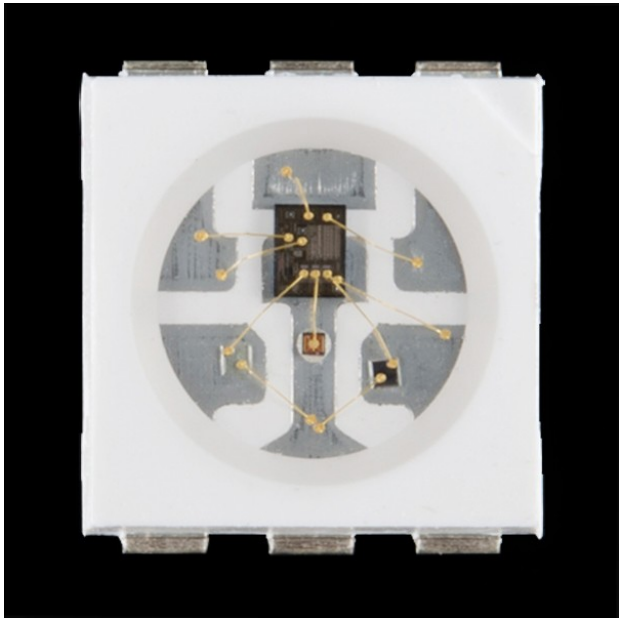
- Library Manager:
  - Easy installation using the IDE
  - *Sketch → Include Library → Manage Libraries…*
- Importing ZIP-Files:
  - *Sketch → Include Library → Add .ZIP Library…*
  - Sample programs are only shown after restarting the IDE
  - Necessary for some manufacturers
- Manual installation:
  - Possible, but rarely necessary → we skip this one

NeoPixel



WS2812-LEDs

- Chip with RBG-LEDs
- Can be controlled with a serial protocol
- Easy to use library for Arduino



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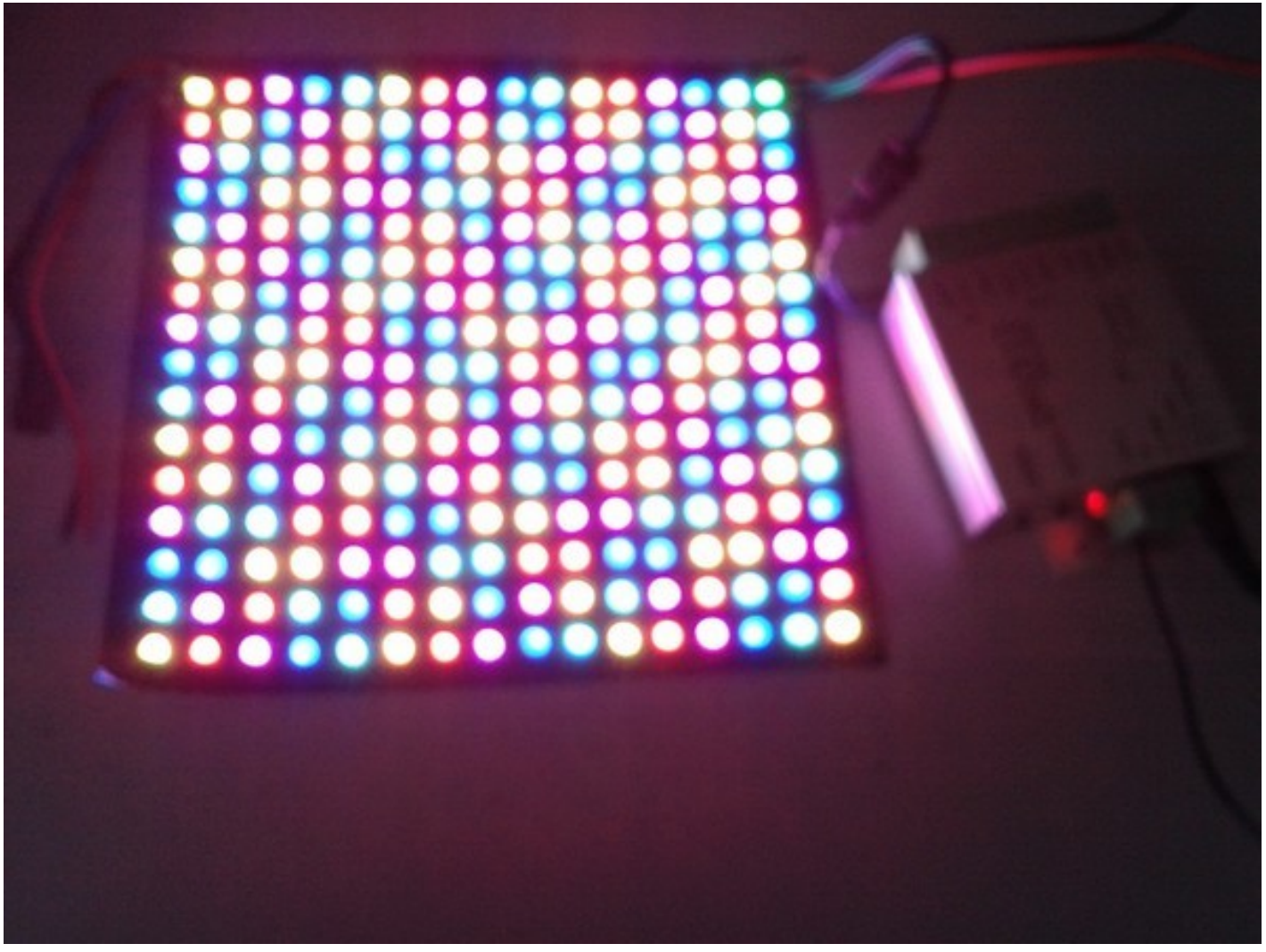

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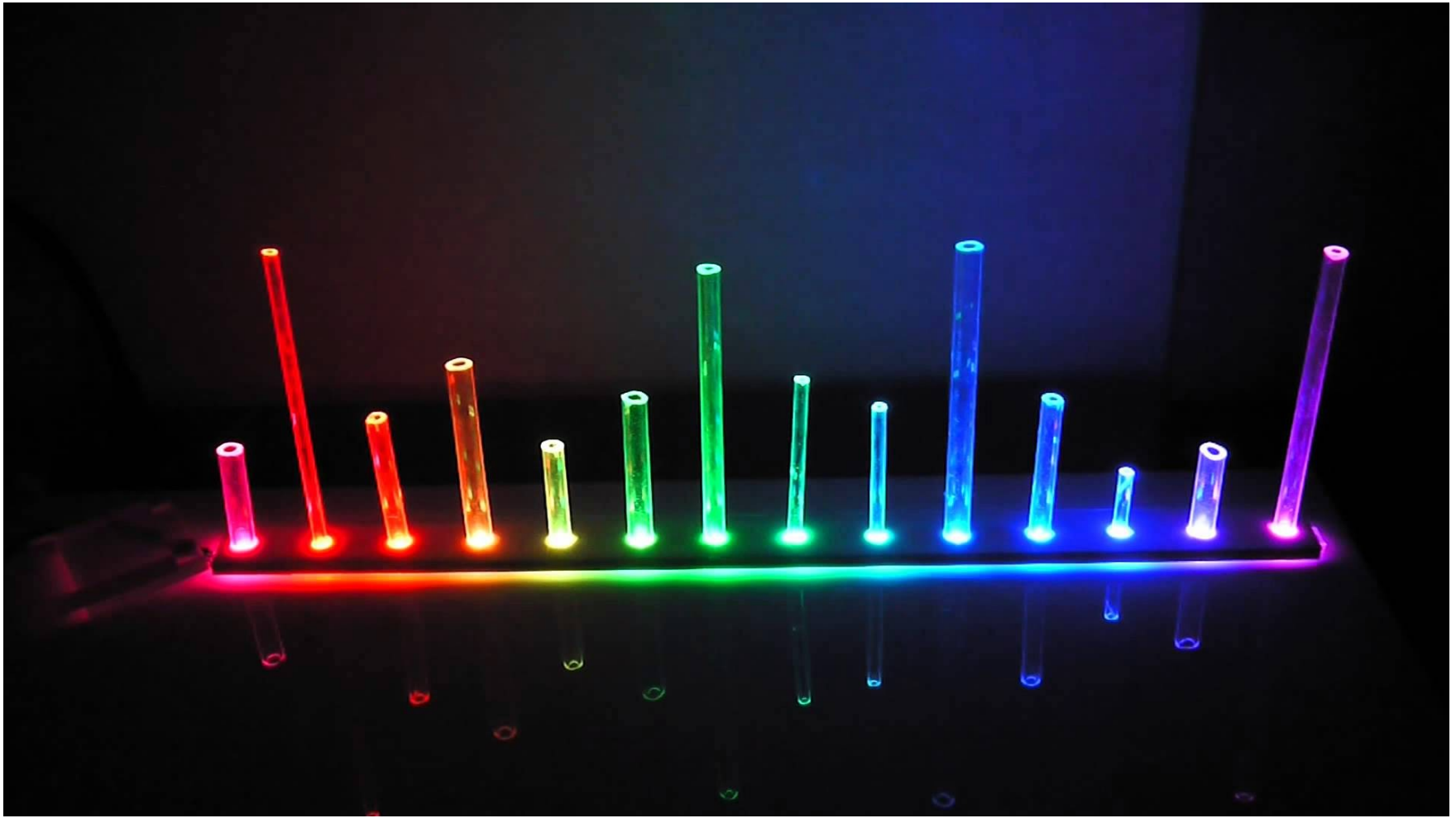


https://i.ytimg.com/vi/aTfXeM4NJJs/maxresdefault.jpg

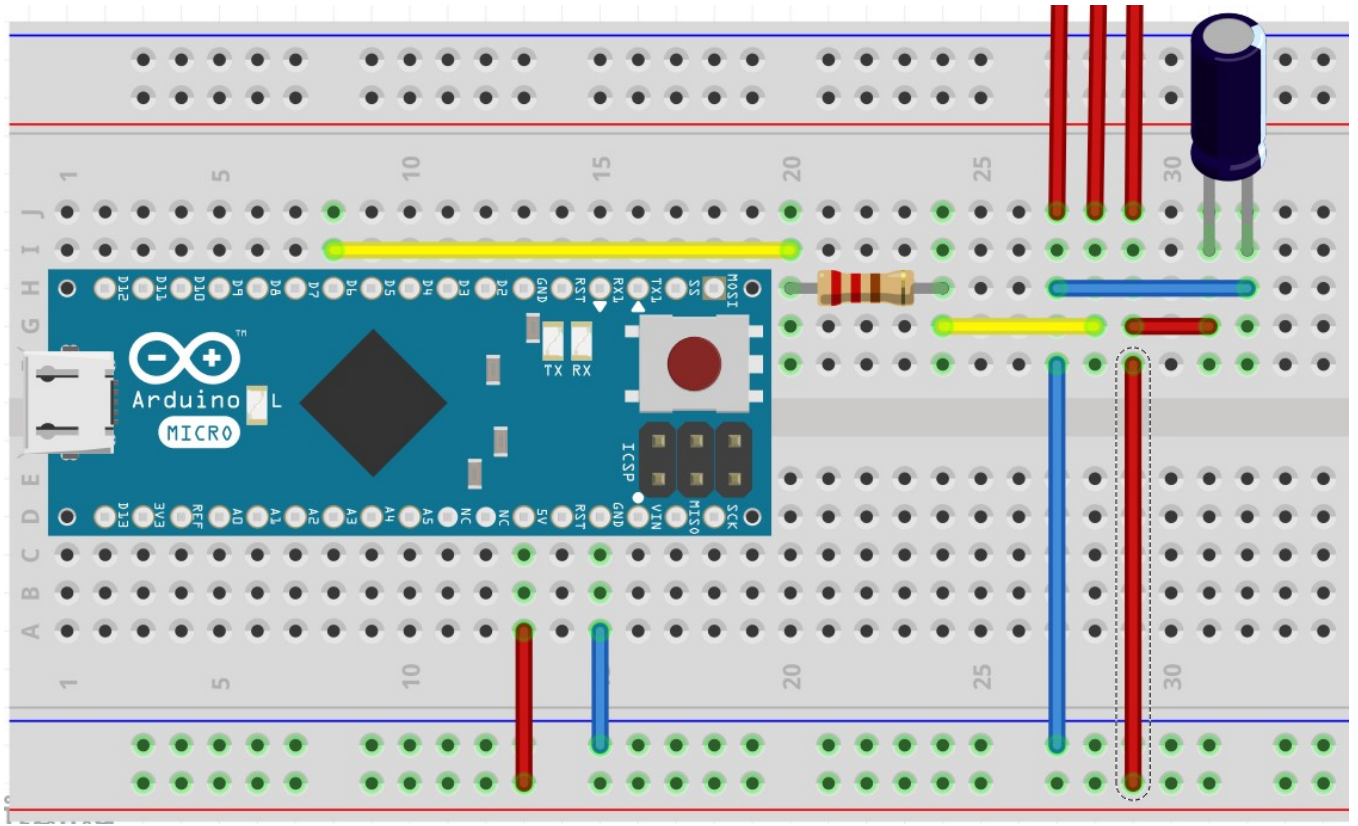
Install the NeoPixel Library...

https://learn.adafruit.com/adafruit-neopixel-uberguide/arduino-library-installation

- *Sketch → Include Library → Manage Libraries…*
- Search for *“NeoPixel”*
- Choose the latest version of *“Adafruit NeoPixel”*
- Click the *“Install”* button

Connecting the LED strip

Resistor: 220Ω, Capacitor: 47μF



created with Fritzing

Exercise: NeoPixel