

Embedded Electronics

Fursquared 2023

A dark blue diagonal gradient bar that starts from the bottom left corner and extends towards the top right corner, covering the lower half of the slide.

Embedded Electronics?

- LEDs
- Sensors
- Input Devices
- Controllers
- Programming



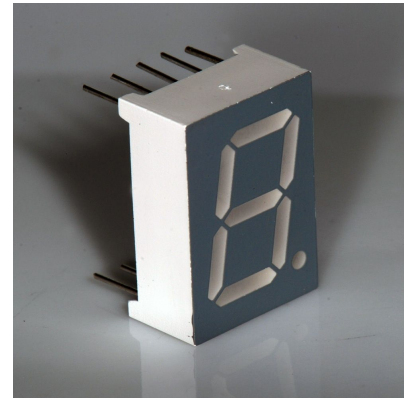
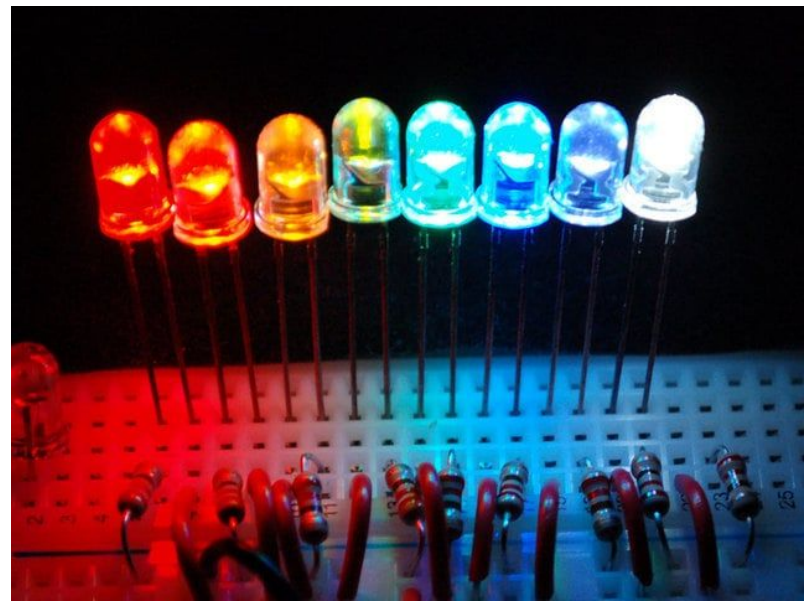
- Creative hobby
- Rewarding problem solving
- Good way to learn coding
- Great addition to arts and crafts



@feronium on Twitter

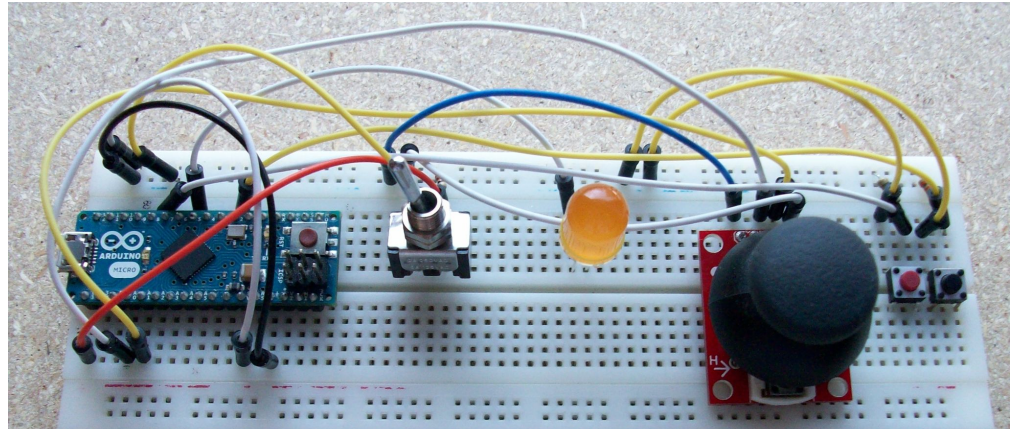
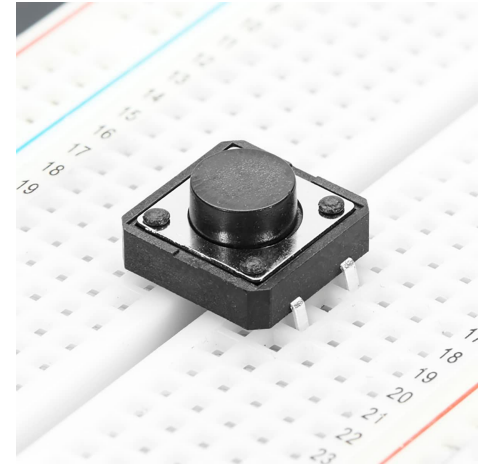
LEDs

- Simple & low power
- Cheap, available in bulk
- Fun variety



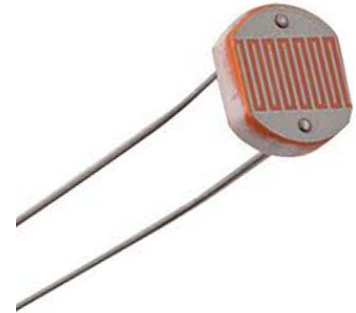
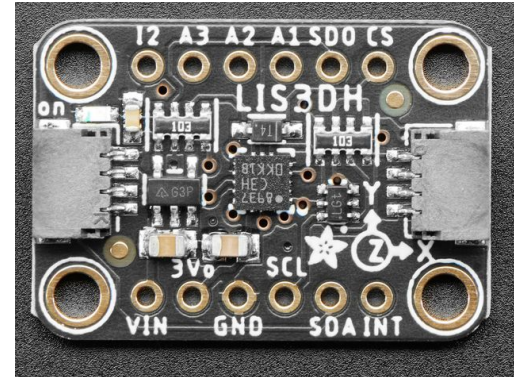
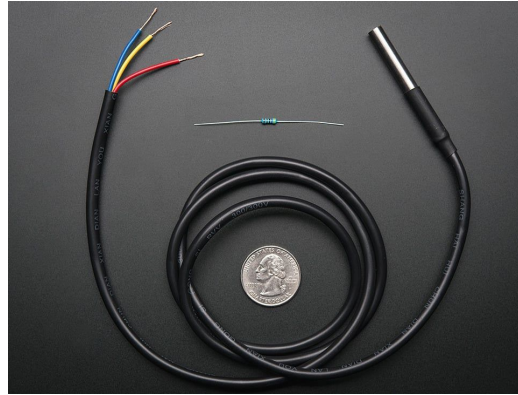
Input Devices

- Switches
- Buttons
- Knobs (potentiometer / variable resistor)
- Joysticks



Sensors

- Tons of types
 - Temperature
 - Accelerometer (motion)
 - Ultrasonic (distance)
 - Photocell (light)
- Vary in complexity



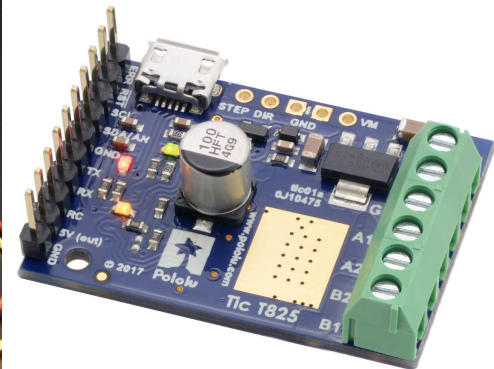
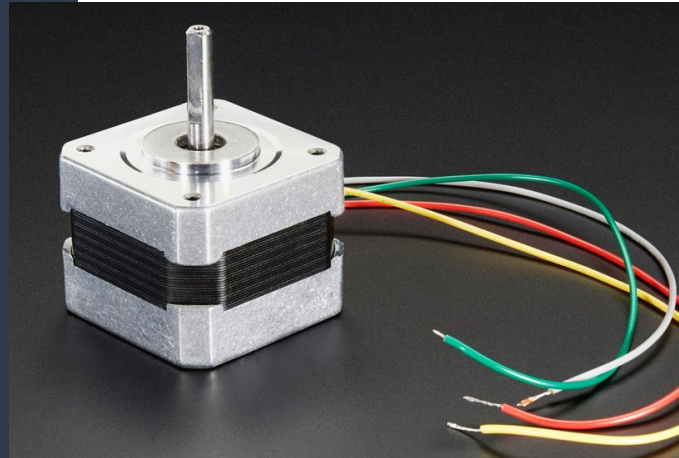
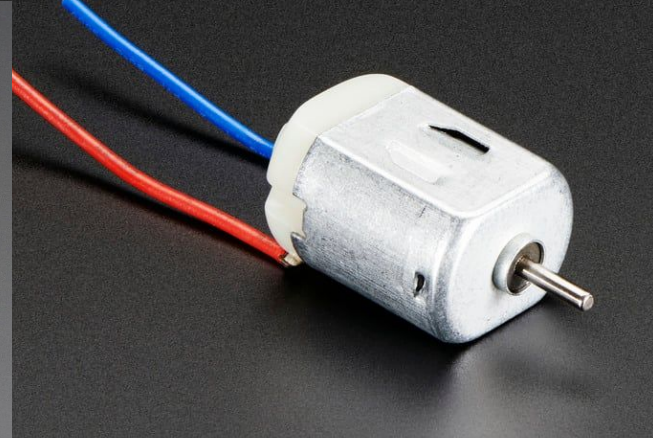
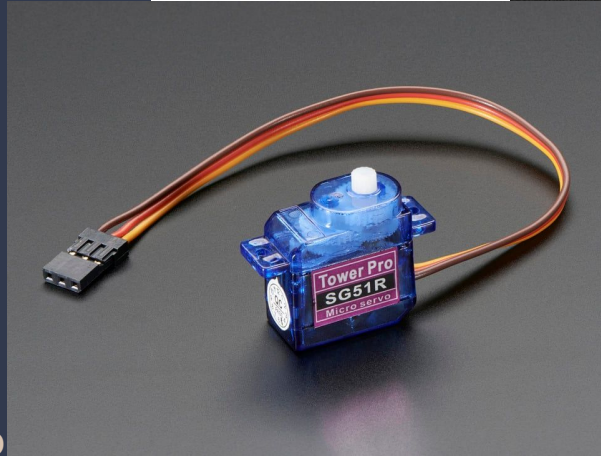
Motion

- Servos
- DC Motors

(Could need extra control for high power)

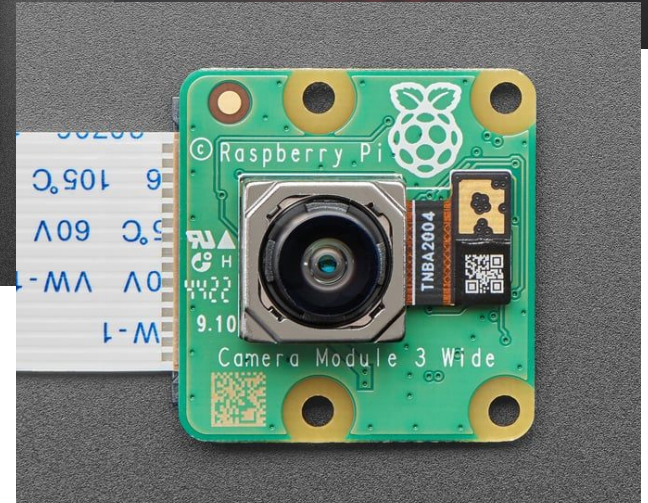
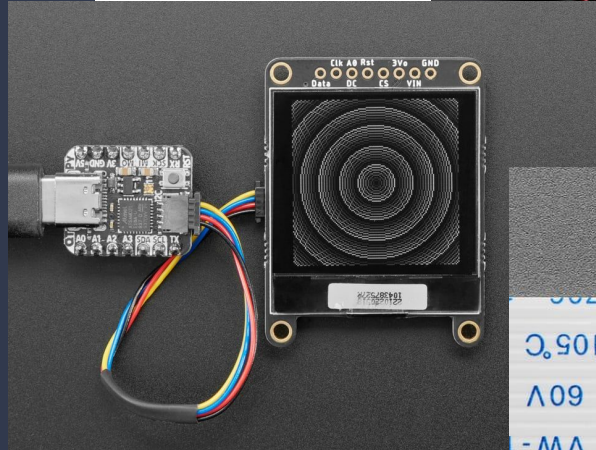
- Stepper Motors

(Needs extra controller)



Gizmos

- LED Strips
- Displays
- Cameras
- Require libraries and more setup



Microcontrollers

Arduino

- Big support community
- Tons of libraries
- Variety of boards and accessories (shields)
- Easy to start with
- Computer required



Arduino IDE

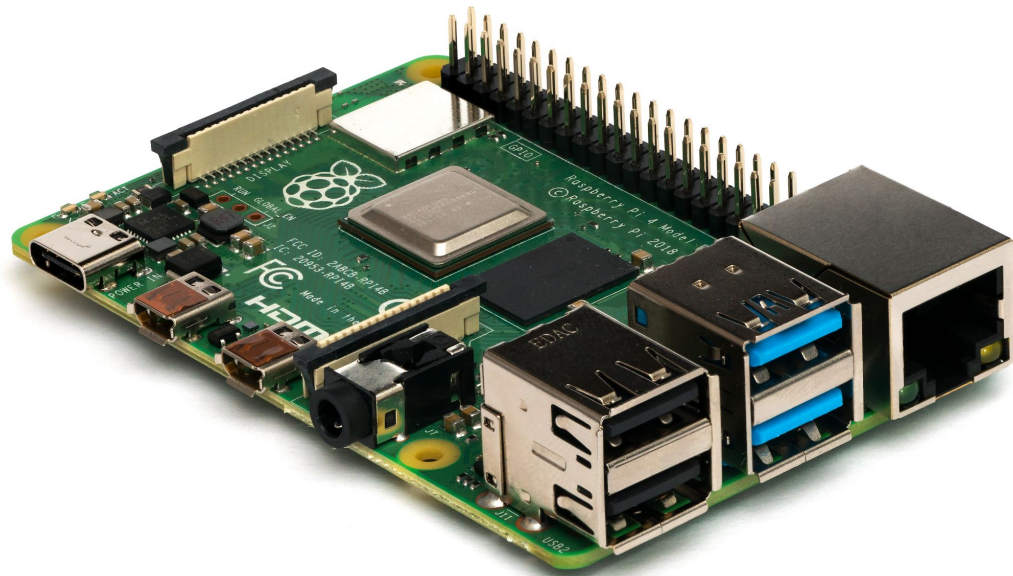
- Plug and play with any Arduino
- C coding
- Simple built-in APIs
- Extra libraries for accessories
- Tons of online resources
- <https://www.arduino.cc/reference/en/>



Raspberry Pi

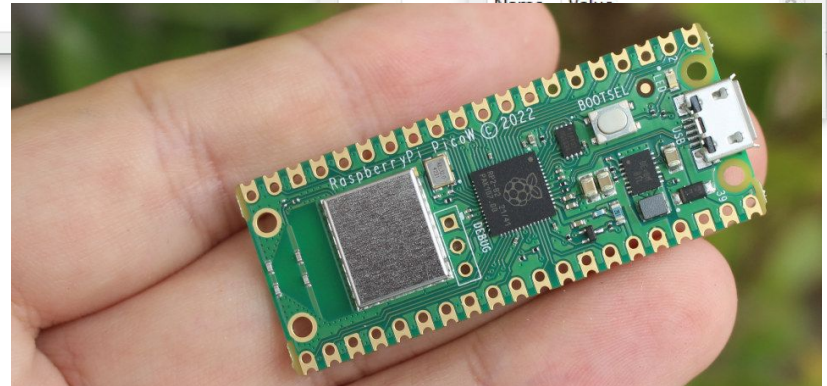
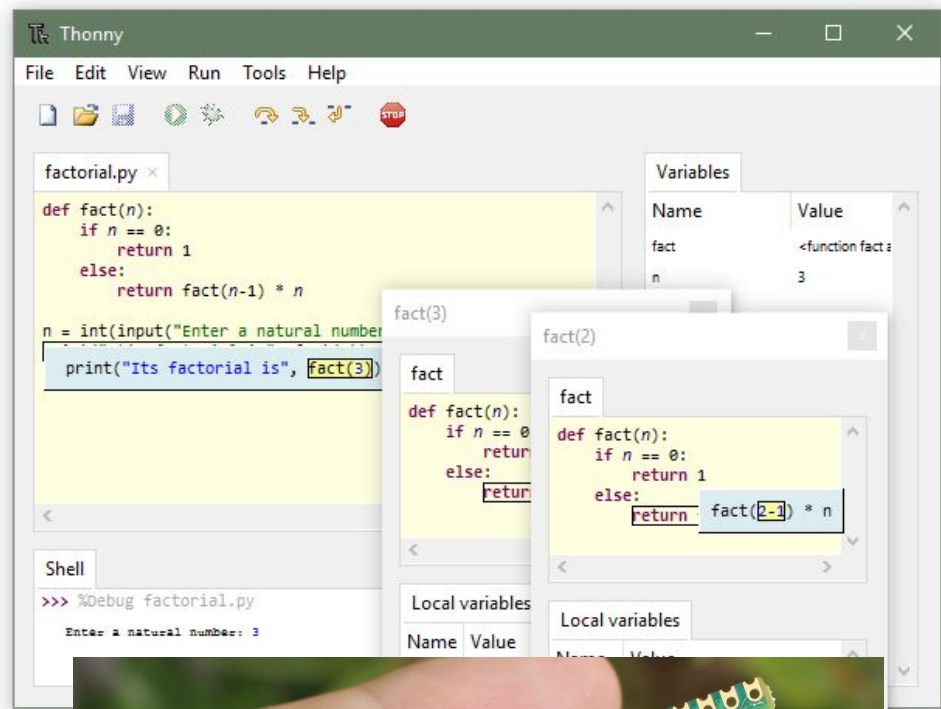
- Mini Computer
 - USB
 - Wifi & Bluetooth
 - HDMI
 - Audio
 - Cameras
- Big community
- Runs Linux
- Can develop in Python

<https://pypi.org/project/RPi.GPIO/>



Raspberry Pi Pico & Thonny

- Akin to Arduino
- Plug and play
- Uses MicroPython
- Thonny IDE



Resources

- Arduino Learn

<https://docs.arduino.cc/learn/>

- Adafruit

<https://learn.adafruit.com/>

- Code Academy Python

<https://www.codecademy.com/catalog/language/python>

- Linux Journey

<https://linuxjourney.com/>



- Digi-Key

<https://www.digikey.com/>

- Surplus Stores

e.g. <https://www.ax-man.com/>
(Twin Cities)

- Micro Center

<https://www.microcenter.com/category/4294910344/boards-projects>



**MICRO
CENTER**

That's all!

Find me online:

- Github - <https://github.com/cookthebook>
- Telegram - @cookenmonster
- Discord - Cooken Monster#8237



Art credit - @_kasscabel on Twitter