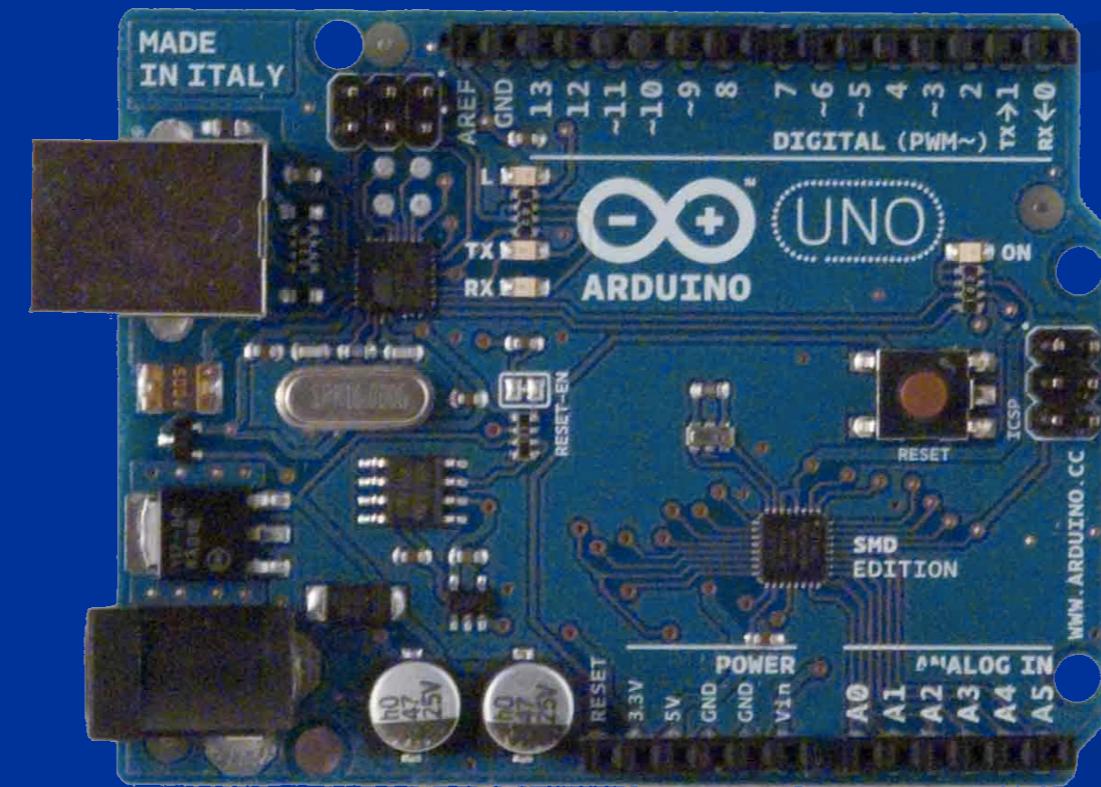


# What is an Arduino ?

**Open Source** electronic prototyping **platform** based on flexible **easy to use** hardware and software.

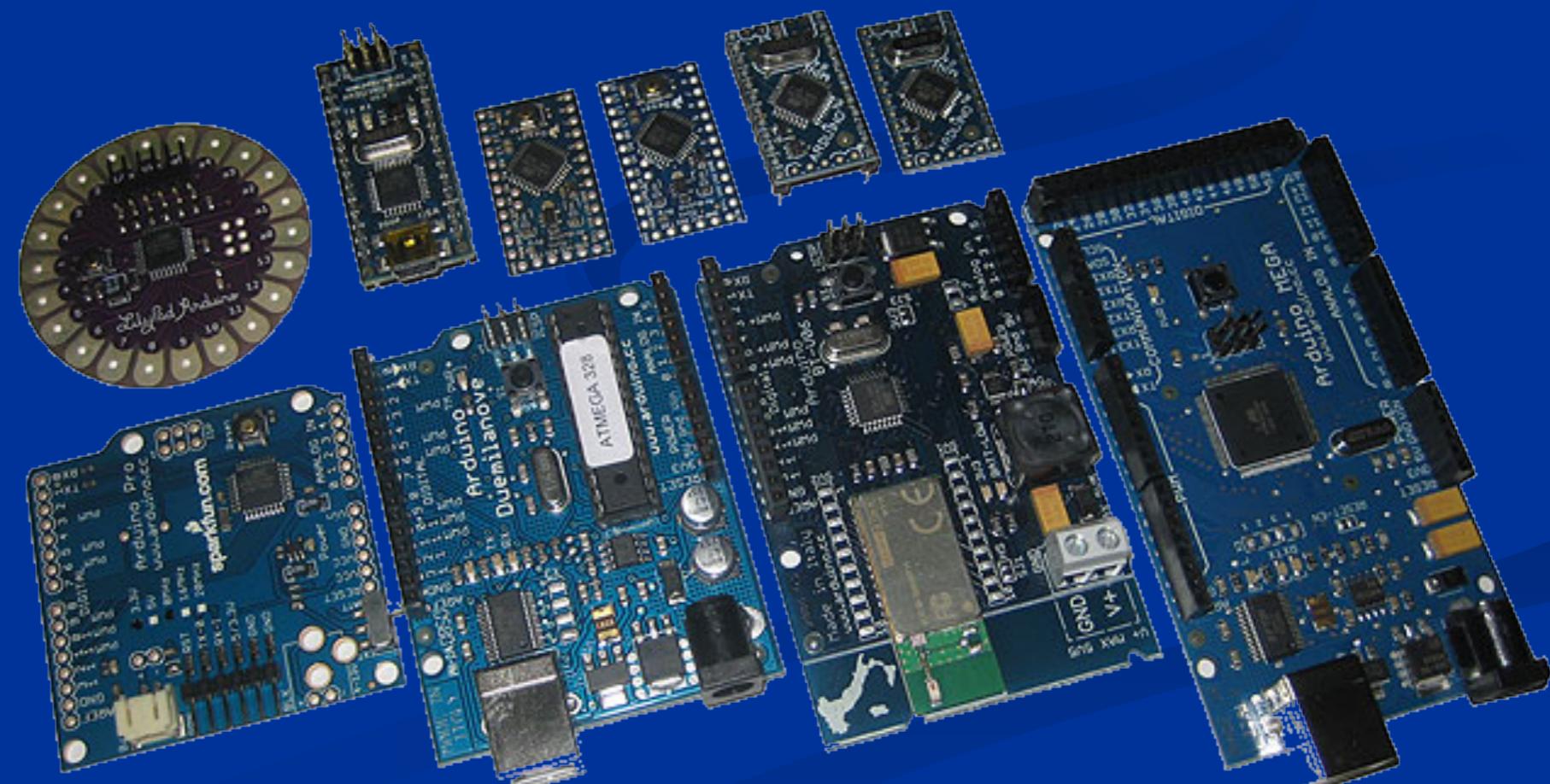


# Why Arduino?

- For whatever reason, Arduino microcontrollers have become the de facto standard.
  - Make Magazine features *many* projects using Arduino microcontrollers.
- Strives for the balance between ease of use and usefulness.
  - Programming languages seen as major obstacle.
  - Arduino C is a greatly simplified version of C++.
- Inexpensive (\$35 retail).

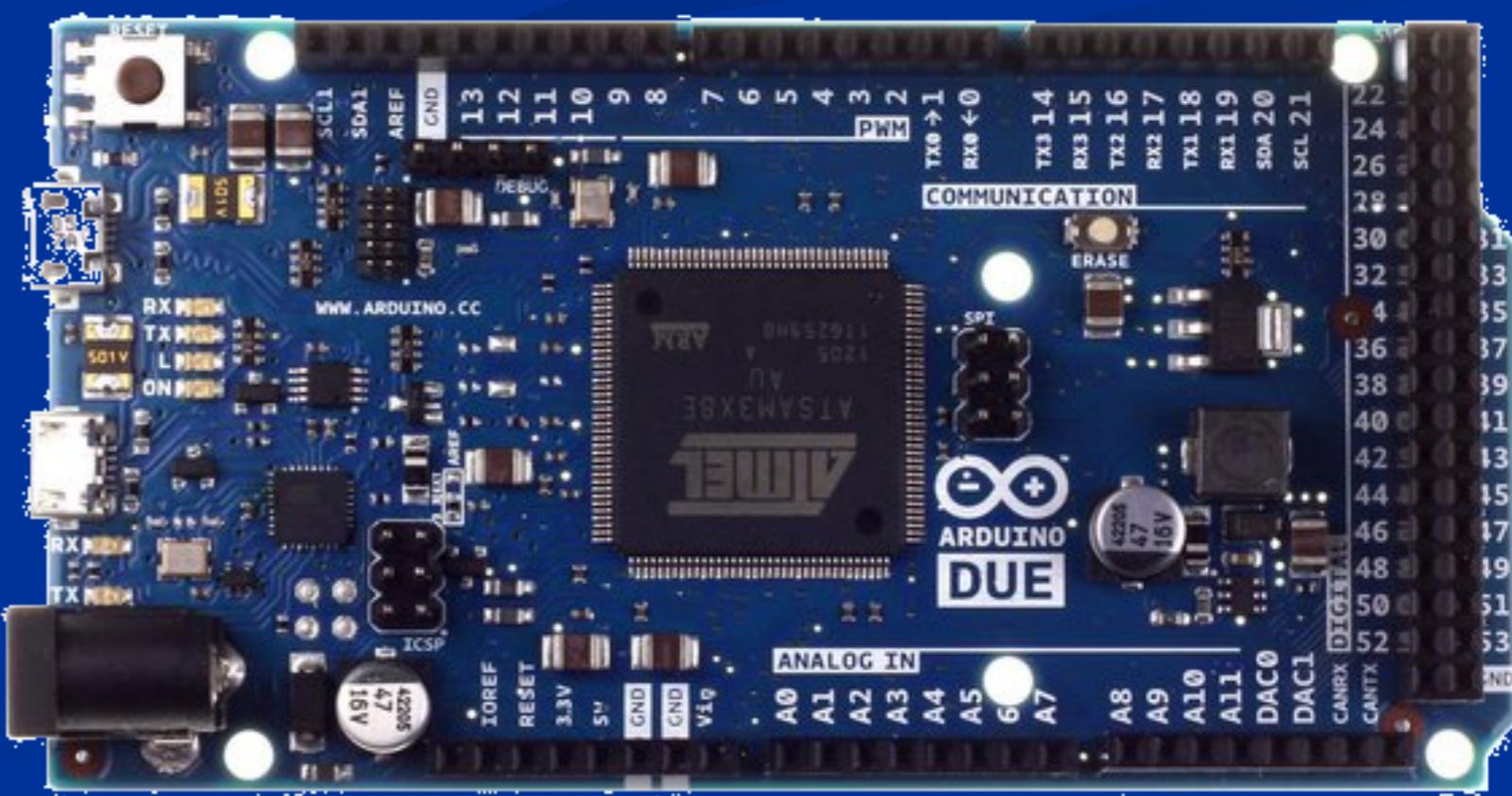
# Arduino Types

- Many different versions
  - Number of input/output channels
  - Form factor
  - Processor
- Leonardo
- Due
- Micro
- LilyPad
- Esplora
- Uno



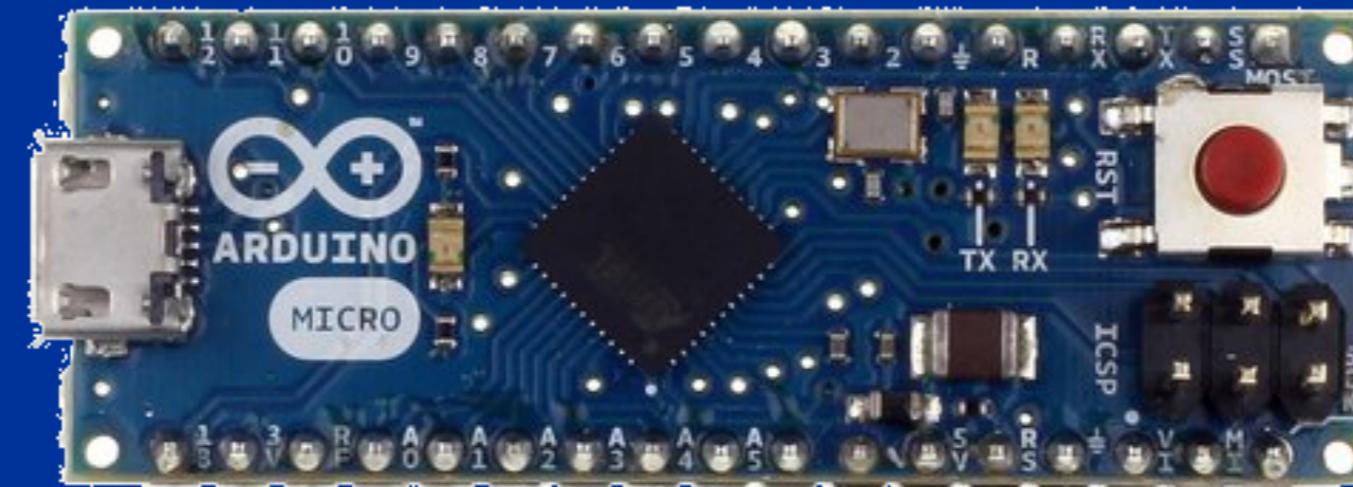
# Due

- Much faster processor, many more pins
- Operates on 3.3 volts
- Similar to the Mega



# Micro

- When size matters: Micro, Nano, Mini
- Includes all functionality of the Leonardo
- Easily usable on a breadboard



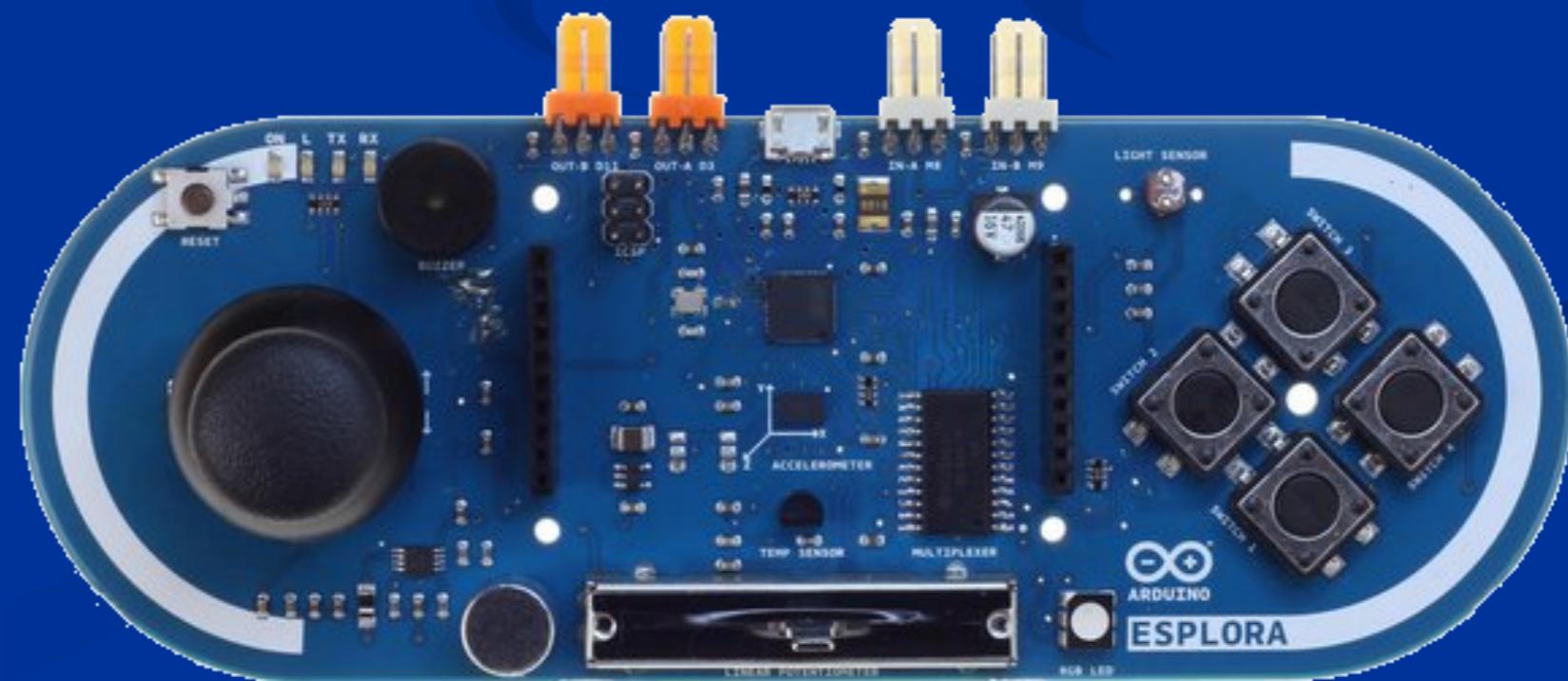
# LilyPad

- LilyPad is popular for clothing-based projects.



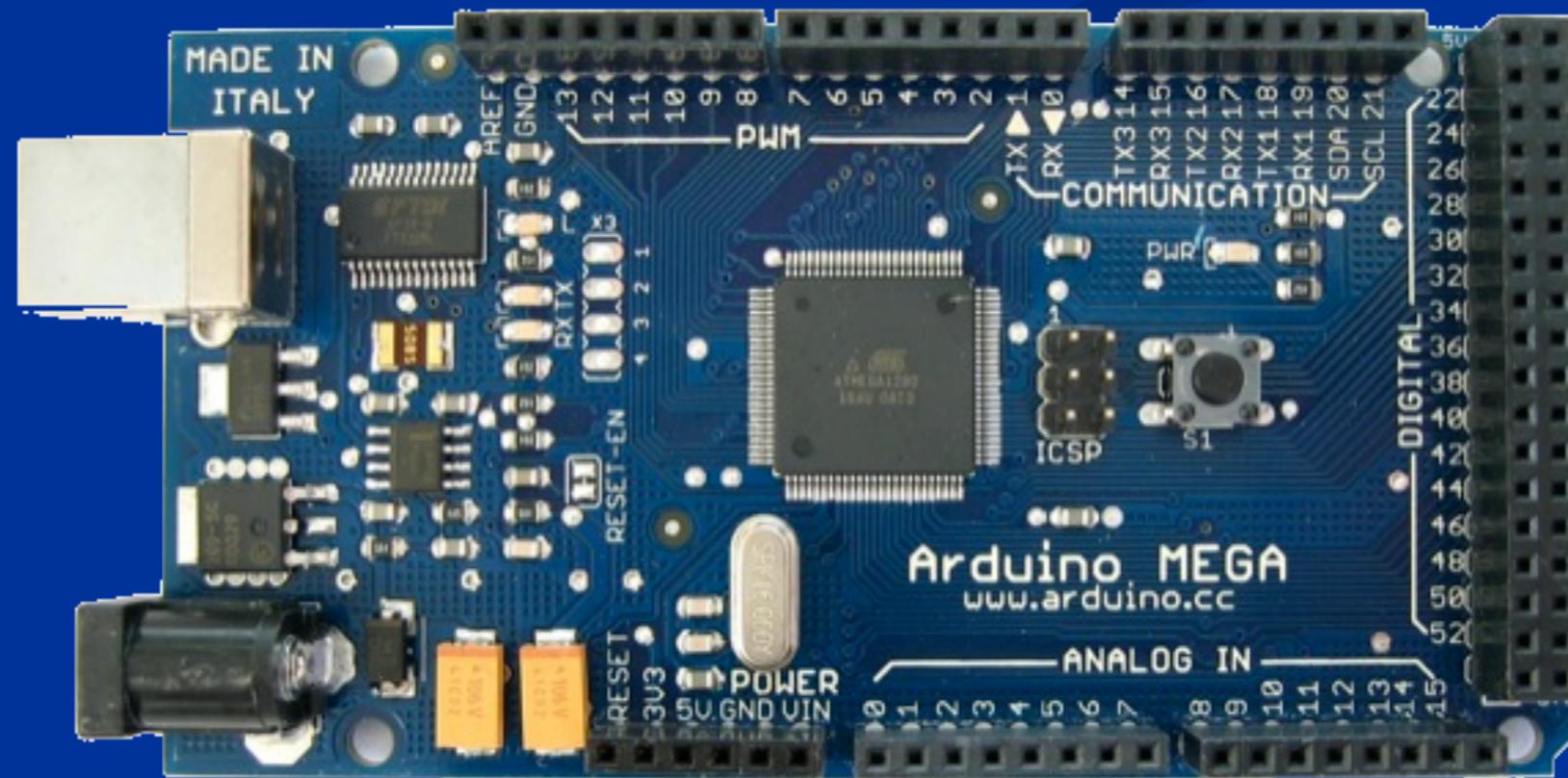
# Esplora

- Game controller
- Includes joystick, four buttons, linear potentiometer (slider), microphone, light sensor, temperature sensor, three-axis accelerometer.
- Not the standard set of IO pins.



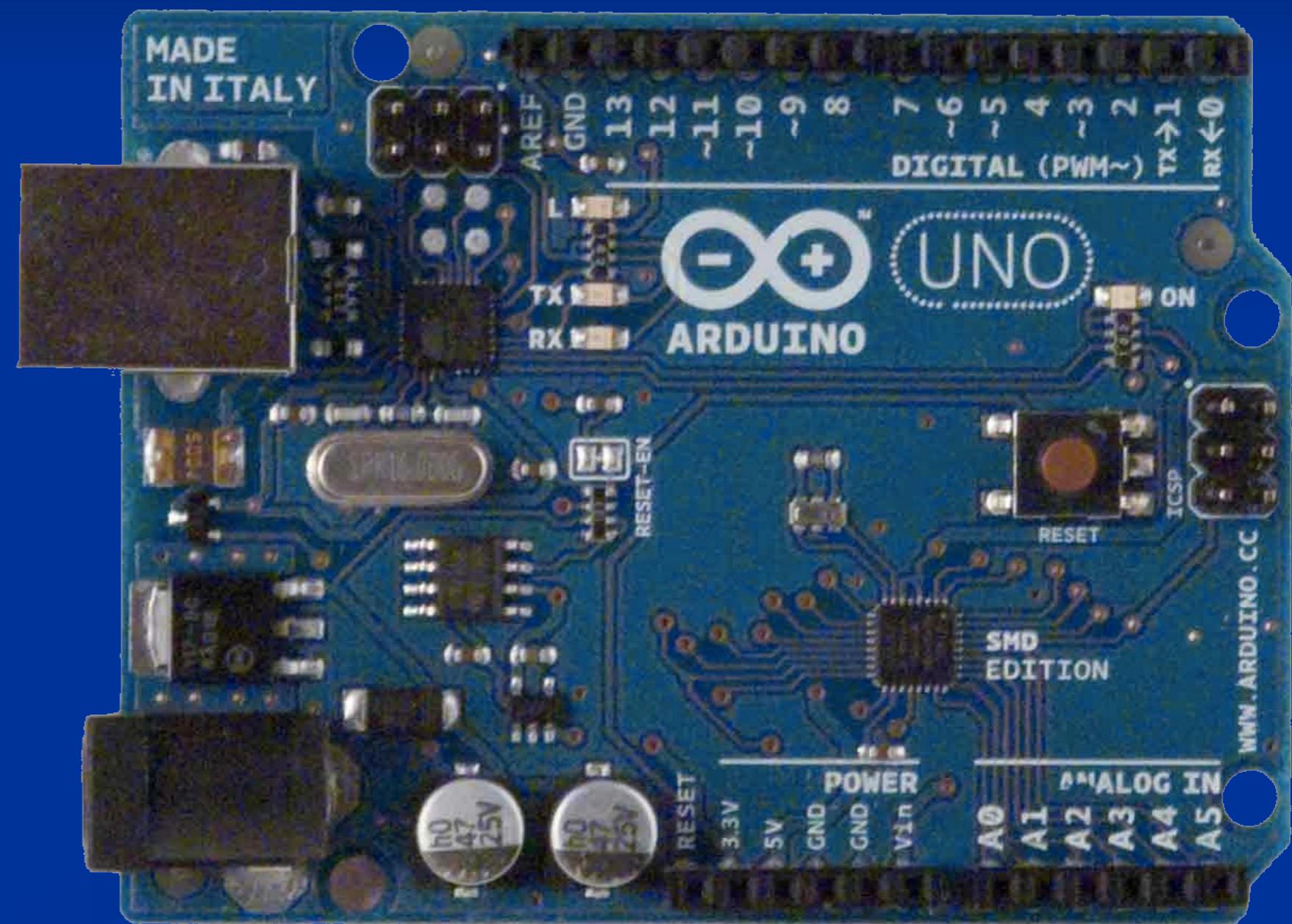
# Mega

- Compared to the Uno, the Mega:
  - Many more communication pins
  - More memory
  - Some interface hardware doesn't work



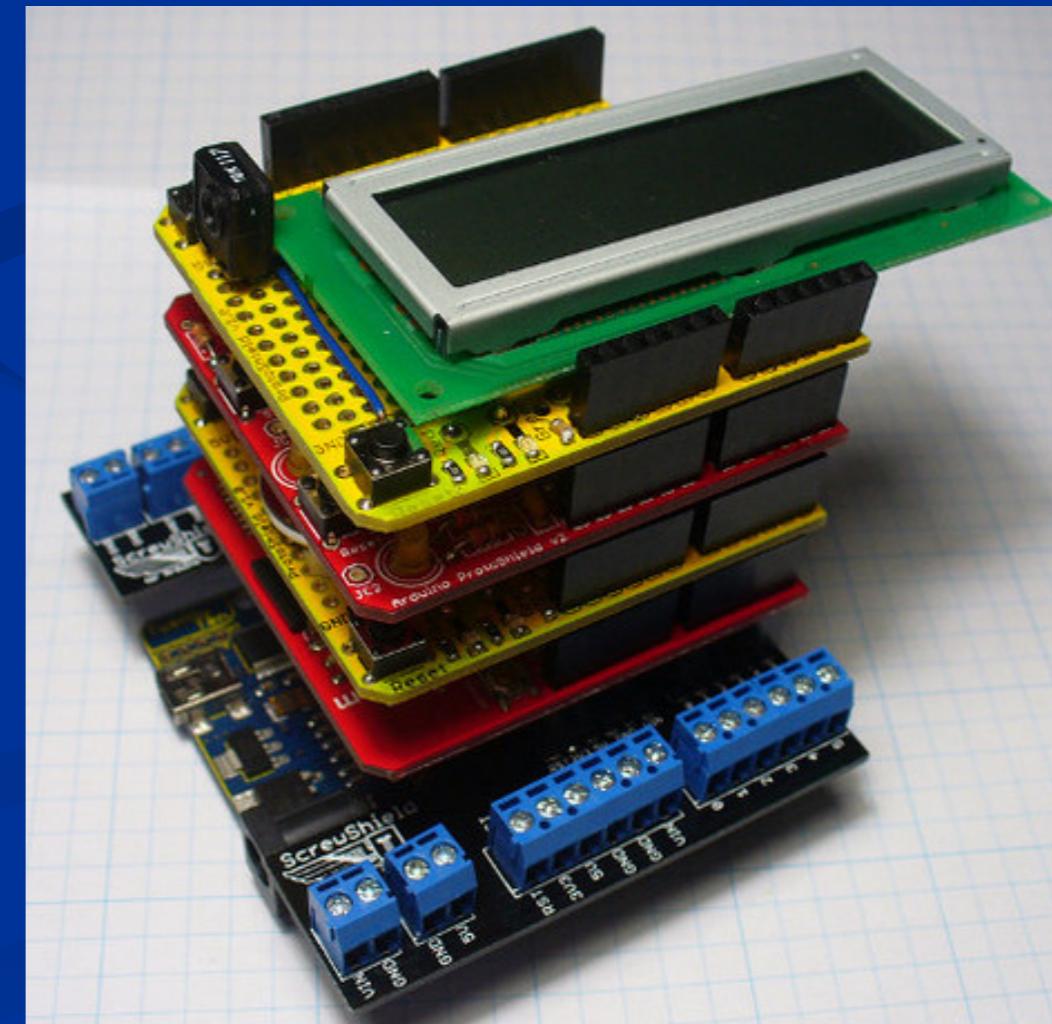
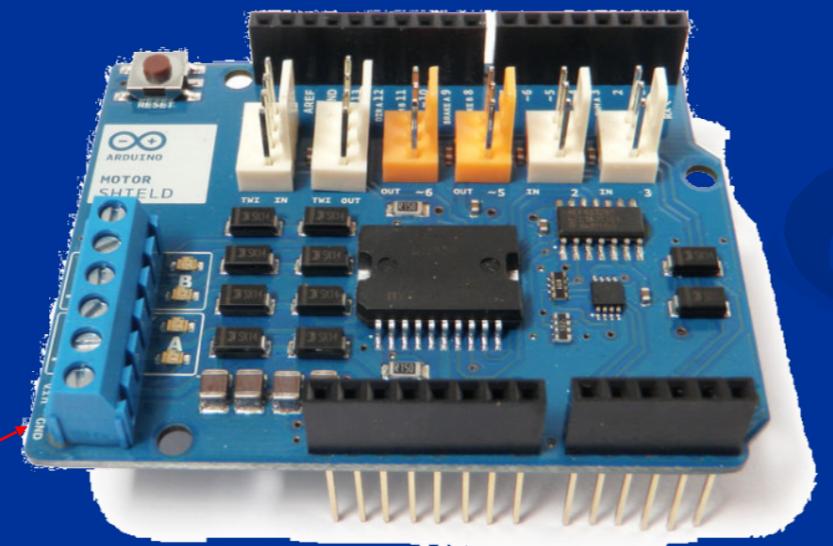
# Arduino Uno Close Up

- The pins are in three groups:
    - Invented in 2010
    - 14 digital pins
    - 6 analog pins
    - power



# Shields

- Shields are circuit boards that plug into the top of an Arduino.
- They extend the capabilities of an Arduino.
- Examples:
  - Ethernet
  - GPS
  - Motor
  - Prototype
- [shieldlist.org](http://shieldlist.org)



# “Competitors” to the Arduino

- PIC controller
  - Microcontroller programmed with C or assembler
- Alternatives to the Arduino line
  - Pinguino – PIC controller
  - MSP430 – Texas Instruments; \$4.30
  - Others: customs, Teensy, etc.
- Netduino
- Computers
  - Raspberry Pi
  - BeagleBones – TI; has computer and controller