Raspberry Pi

Pros

1. 40 digital I/O pins
2. 1.2 GHz Quadcore CPU
3. 1GB Ram
4. On board WIFI
5. Multiple serial ports

Cons

1. Only digital I/O pins – no analog
2. 3.3v GPIO pins, but it does have 5 VOUT
3. Demands constant 5V input, OS is particular
4. More software = more bugs
5. Setting up environment
6. Will require external hardware for user input and output (e.g. a monitor, mouse, and keyboard)

Essentially, the Raspberry PI 3b is comparatively outstanding at more computationally strenuous tasks. It has onboard WIFI and accessible I/O pins.

One possible solution is to chain a Raspberry and Arduino together via serial. This would eliminate the need for the WIFI shield (which wouldn’t fit an Arduino Mega anyway) and allow for faster processing.

That said, how much need is there for processing? The Pi would be useful, but we’ll have to find away to provide a constant 5 volts and deal with the shutdown procedures.

Arduino

Pros

1. 54 digital I/O pins and 16 analog I/O pin
2. PWM support on 15 pins
3. Tolerance w/ voltage input – range from approx. 9V-12V
4. Easily expandable with shields
5. Simple implementation
6. Robust tutorials/helpful community

Cons

1. CPU 75 times slower, 125,000 times less RAM
2. More difficult to save data, but possible
3. Less flexibility

On the other hand, Arduino is preferable to interface with hardware. It performs exceedingly well at acting as a medium between input and output. It has enough processing capabilities to manipulate data and convert it to viable output.