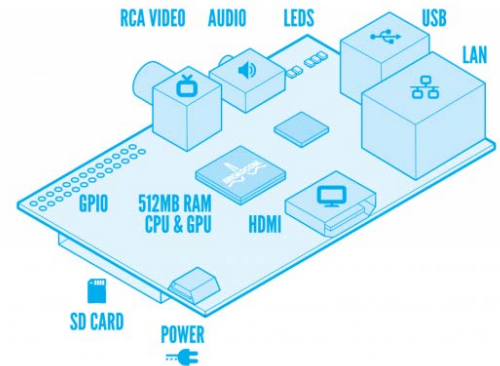


Life with Pi

Microcomputing in Academia

Presentation at CUNY IT Conference 2013



What is a Microcomputer? Microcontroller?

- **Microcomputers** (better known as *single-board computers*) are complete computers built on a single circuit board, with microprocessor(s), memory (RAM), input/output (I/O), and other features required of a functional computer. It is possible to load an operating system (usually of the Linux variety) onto these computers.
Popular devices:
 - Raspberry Pi (\$35.00)
 - BeagleBone (\$89.00)
- **Single-board microcontrollers** are built onto a single circuit board that provides all of the circuitry necessary for a useful control task: microprocessor, I/O circuits, clock generator, memory (RAM), and more.
Popular devices:
 - Arduino (\$29.95)

Uses in Recreation

- Arcade games
- Home brewing
- Weather monitor stations
- Home automation
- Jukeboxes and synthesizers
- Automatic pet food & treat dispensers

Uses in Pedagogy

- Individual research stations
- Cross-disciplinary projects
- Testing environment for coding projects
- Class/course web server per class/student for ad hoc storage or collaboration
- Paperless archive repository for classes

Uses in Research

- Cheap, disposable computing in the lab or studio
- Use inexpensive sensors (e.g., temperature, motion, light, GPS, acceleration, etc.)
- Build prototypes quickly
- Maintain tight control over your machine(s)
- Topic of publication (both scholarly and popular)

Computational Literacy

Computational literacy is the ability to use computers and computational technologies to solve problems. It supports algorithmic thinking and collaboration. Using single-board computers and microcontrollers is becoming a popular method of introducing computational literacy into academia.

Resources

Hardware

- <http://www.raspberrypi.org/>
- <http://www.beagleboard.org/>
- <http://www.marsboard.com/>
- <http://www.rascalmicro.com/>
- <http://www.arduino.cc/>

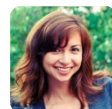
Projects & Tutorials

- <http://www.adafruit.com/>
- <http://www.makezine.com/>
- <http://www.themagpi.com/>
- <http://www.element14.com/>
- <http://raspberrypi.stackexchange.com/>

Presenters



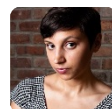
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