

Physical Computing, semFEUP08

Design de Interacções

filipe.valpereiro@inmotion.pt



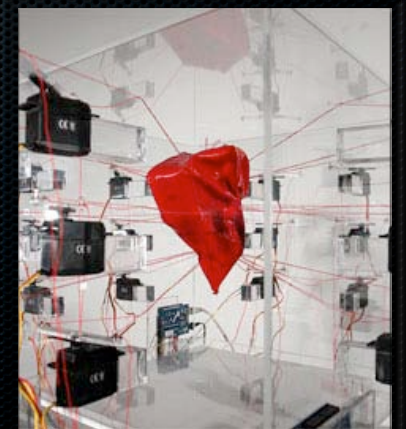
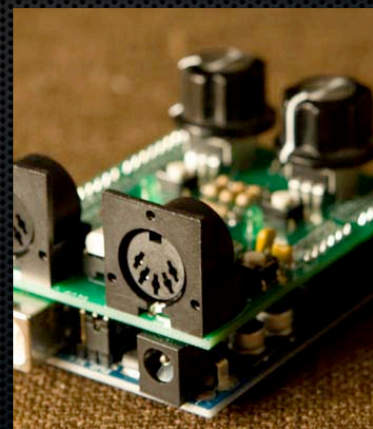
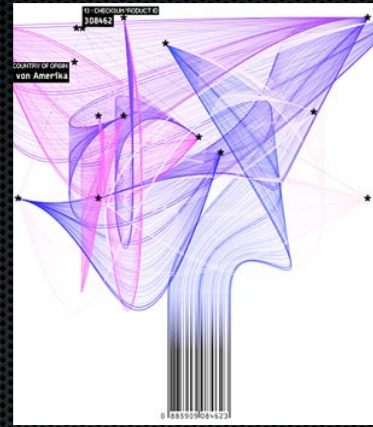
Physical Computing

Significa em termos genéricos a criação de sistemas interactivos utilizando hardware e software que respondem a estímulos do mundo *analógico* ...



Physical Computing

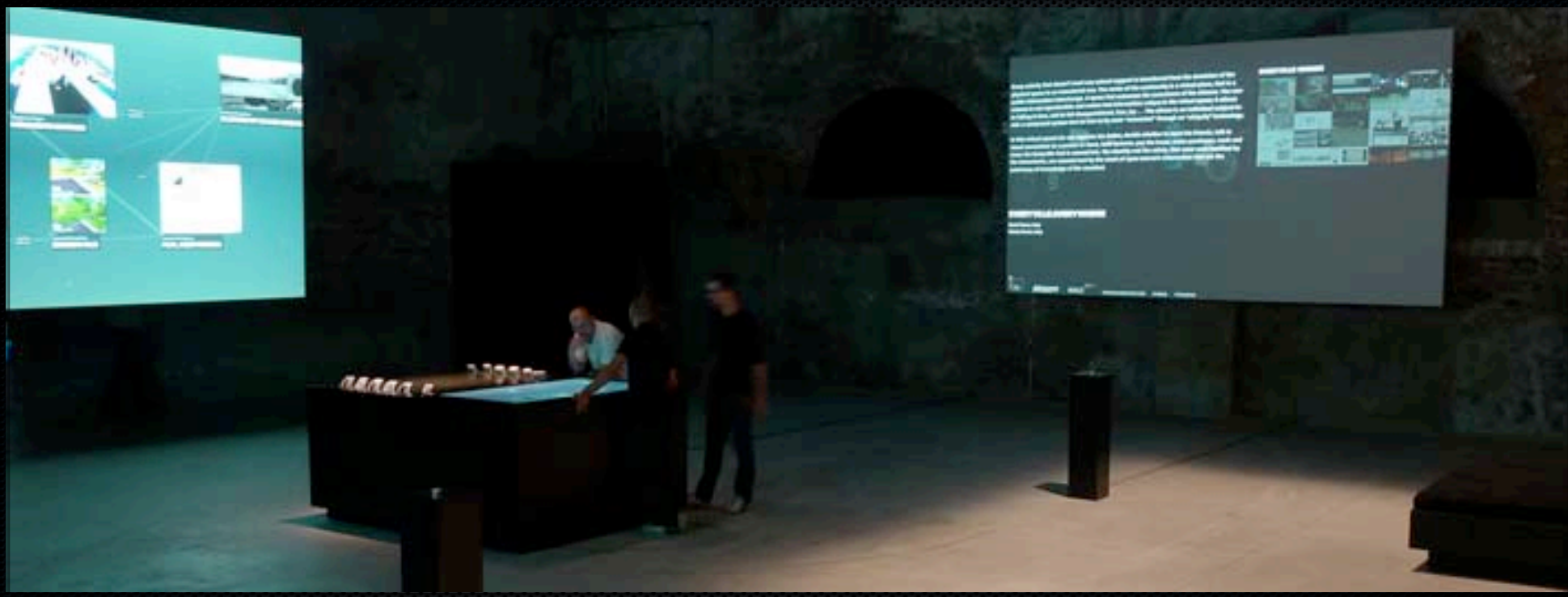
Termo utilizado para descrever a base comum a trabalhos de natureza criativa que permitem explorar a relação entre o homem e o mundo digital de forma espontânea e natural.



Aplicações de Physical Computing

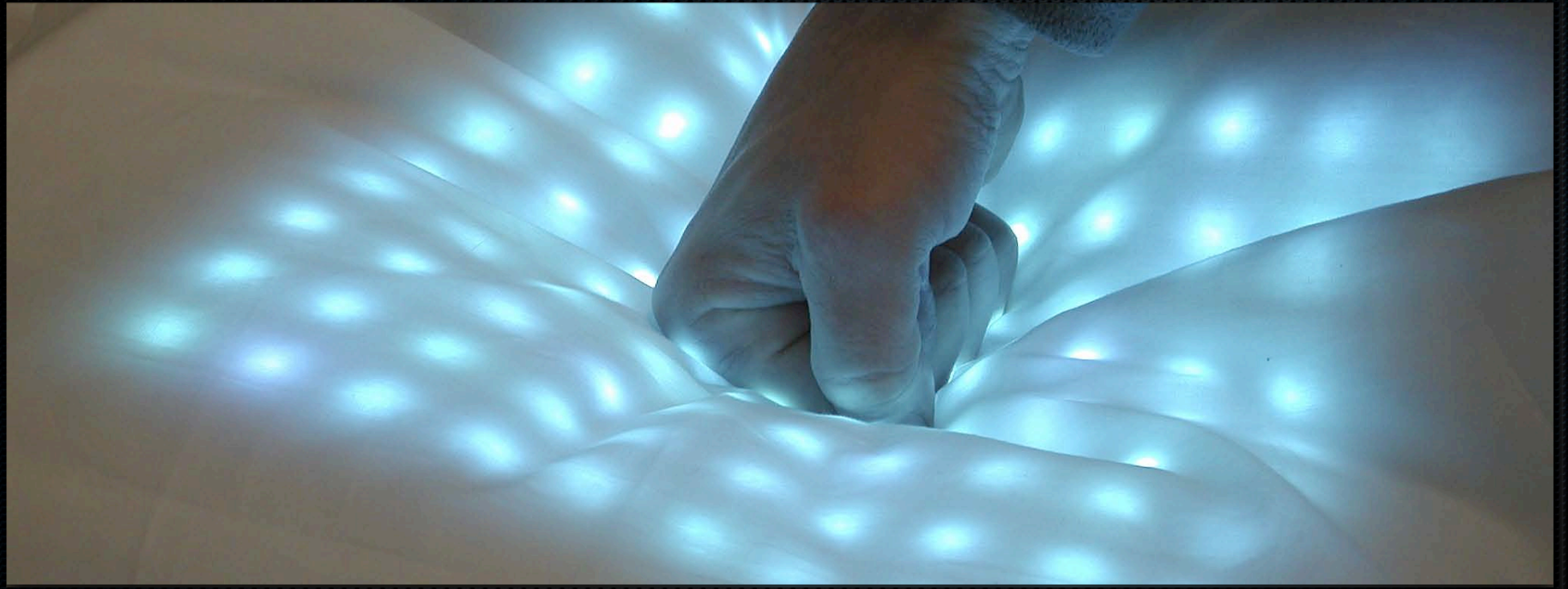
- ✦ Publicidade
- ✦ Artes performativas
- ✦ Interacção homem/máquina
- ✦ Apresentação de informação
- ✦ *Smart applications and clever devices*





Mæve

Instalação interactiva na Bienal de Veneza



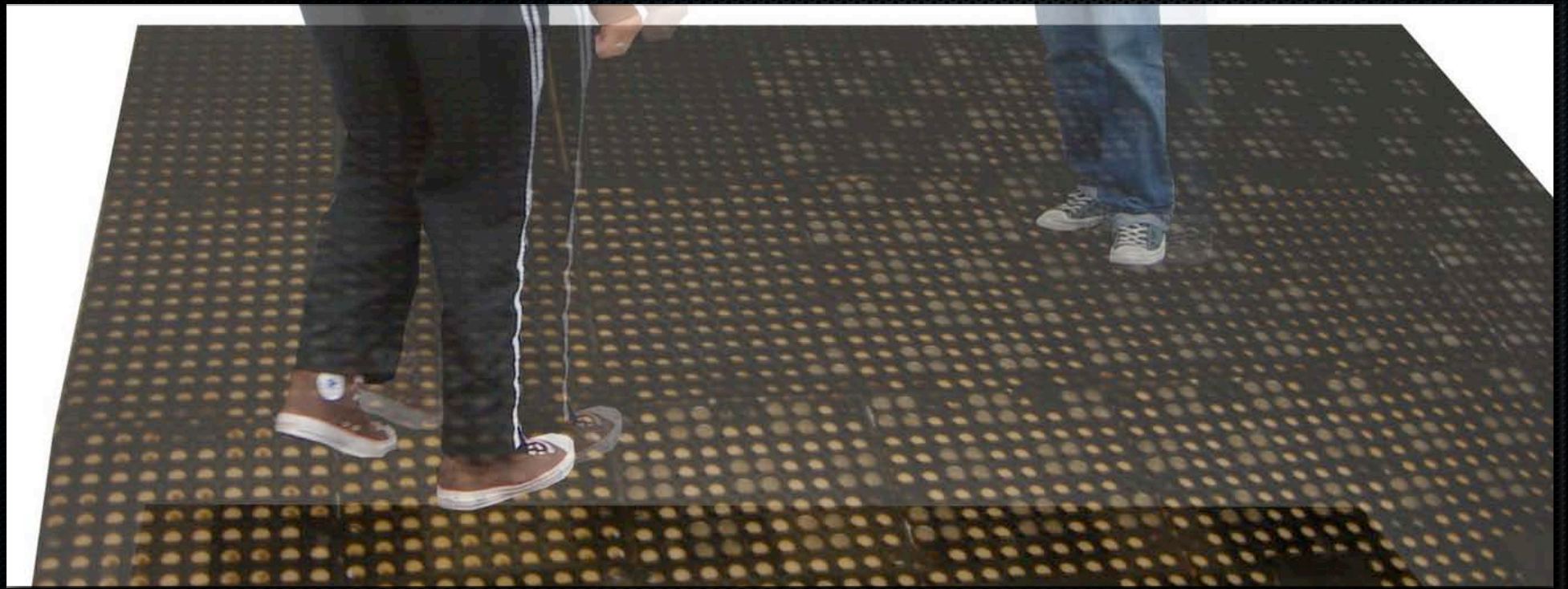
Philips Research

Pesquisa em sistemas têxteis interactivos e emissores de luz



Usman Haque

Burple London, September 16, 2007

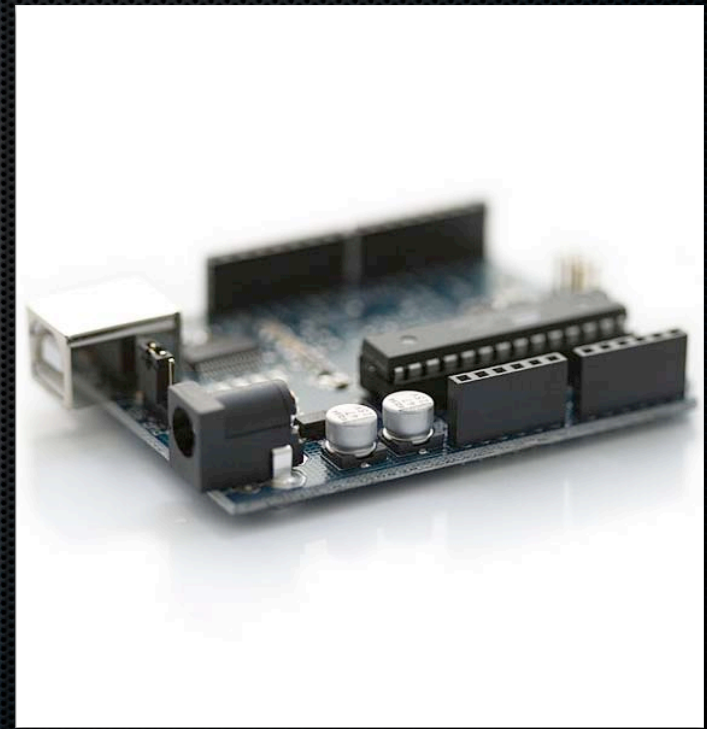


Led's Urban Carpet

Instalação interactiva portátil para contextos urbanos

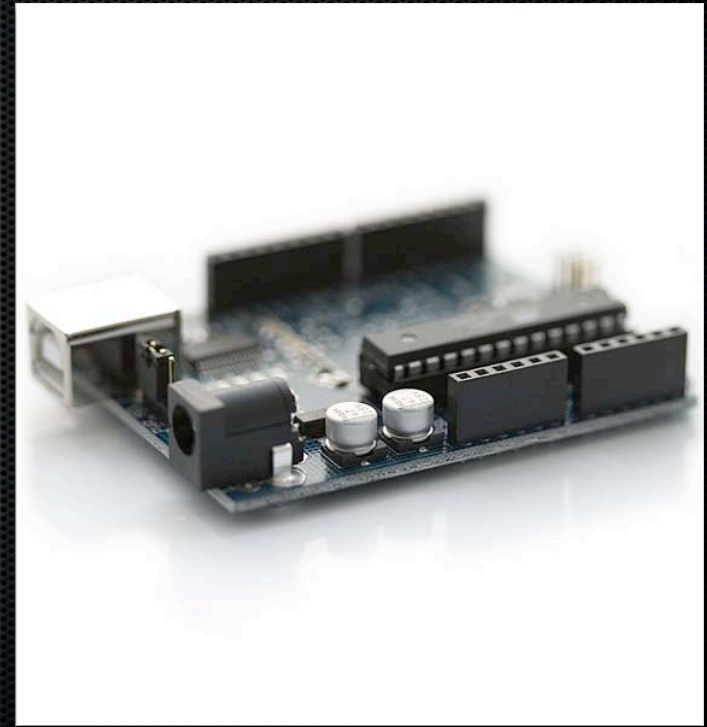
Arduino

Tudo começou com a necessidade de um simples dispositivo para controlar alguns robots em 2005. Alguns meses mais tarde já havia encomendas para centenas de Arduino's



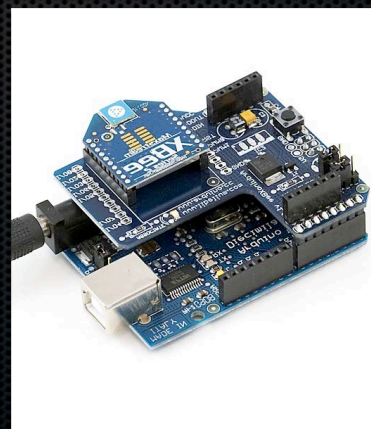
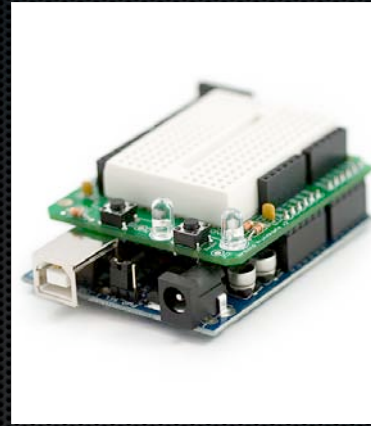
Arduino: Características

- 1K RAM, 16K EEPROM, 16MHz
- 8 entradas analógicas (10 bit's)
- I2C, SPI, 2Wire, PWM
- Programável em C, C++
- Baixo consumo



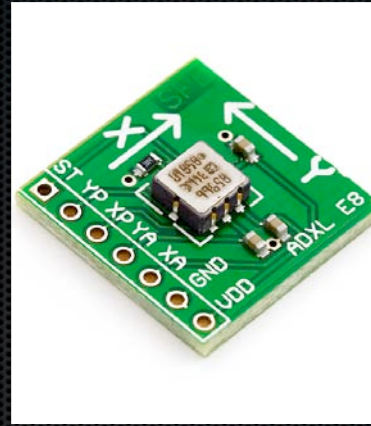
Arduino: Extensões

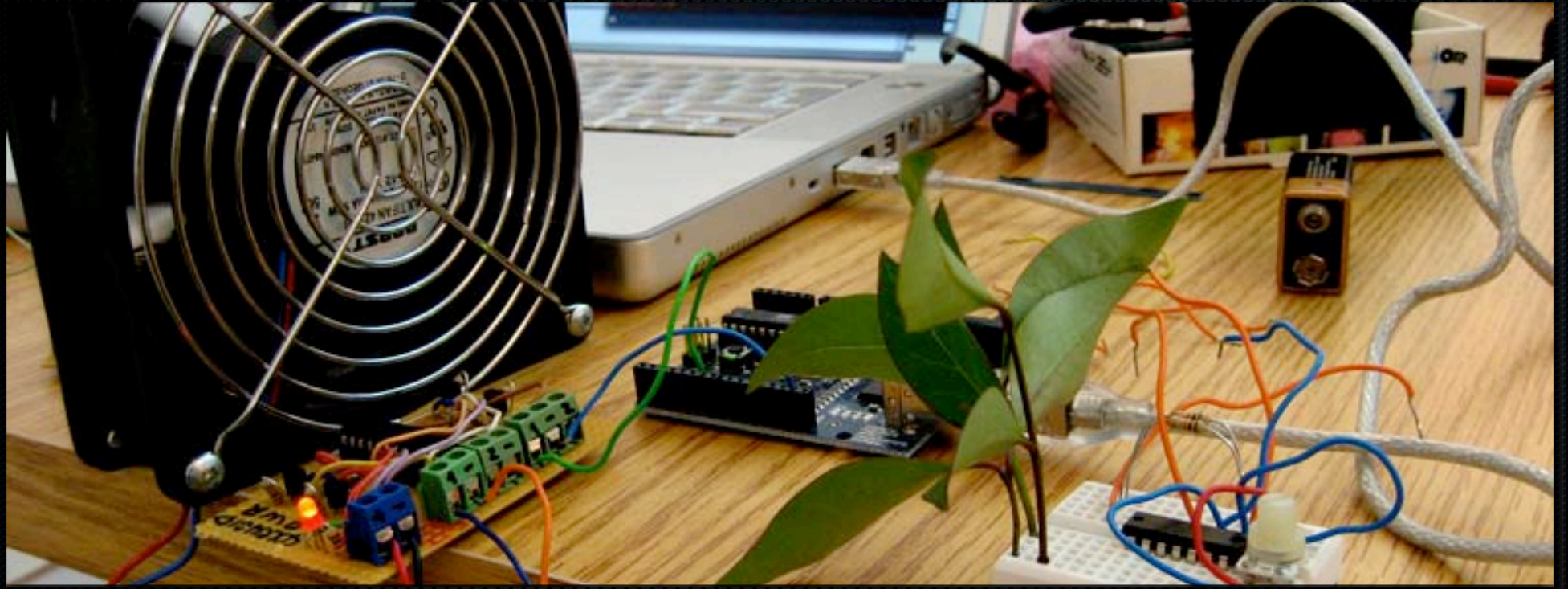
- Placa de prototipagem
- Arduino Bluetooth
- Arduino ZigBee
- Placa para ligação via Ethernet
- X10, Romba,



Arduino: Sensores

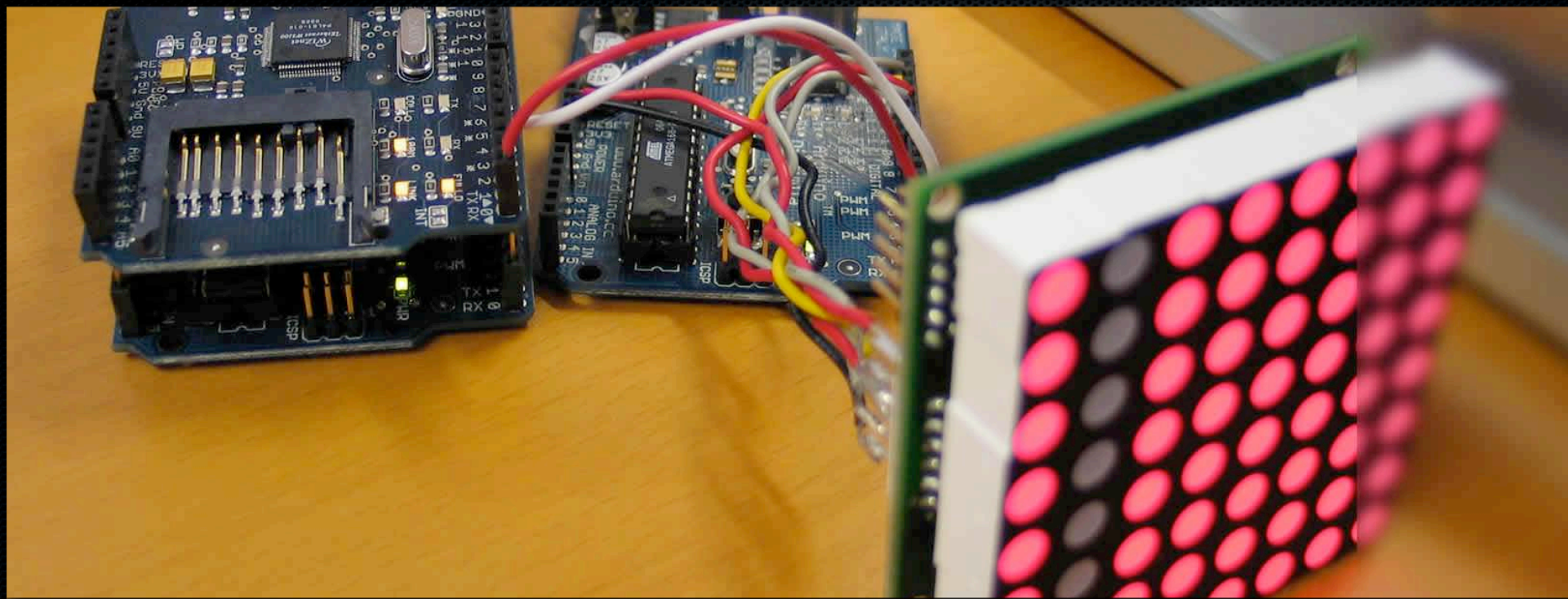
- Movimento humano
- Proximidade
- Biométricos
- Parâmetros ambientais
- GPS, GPRS, RFID ...





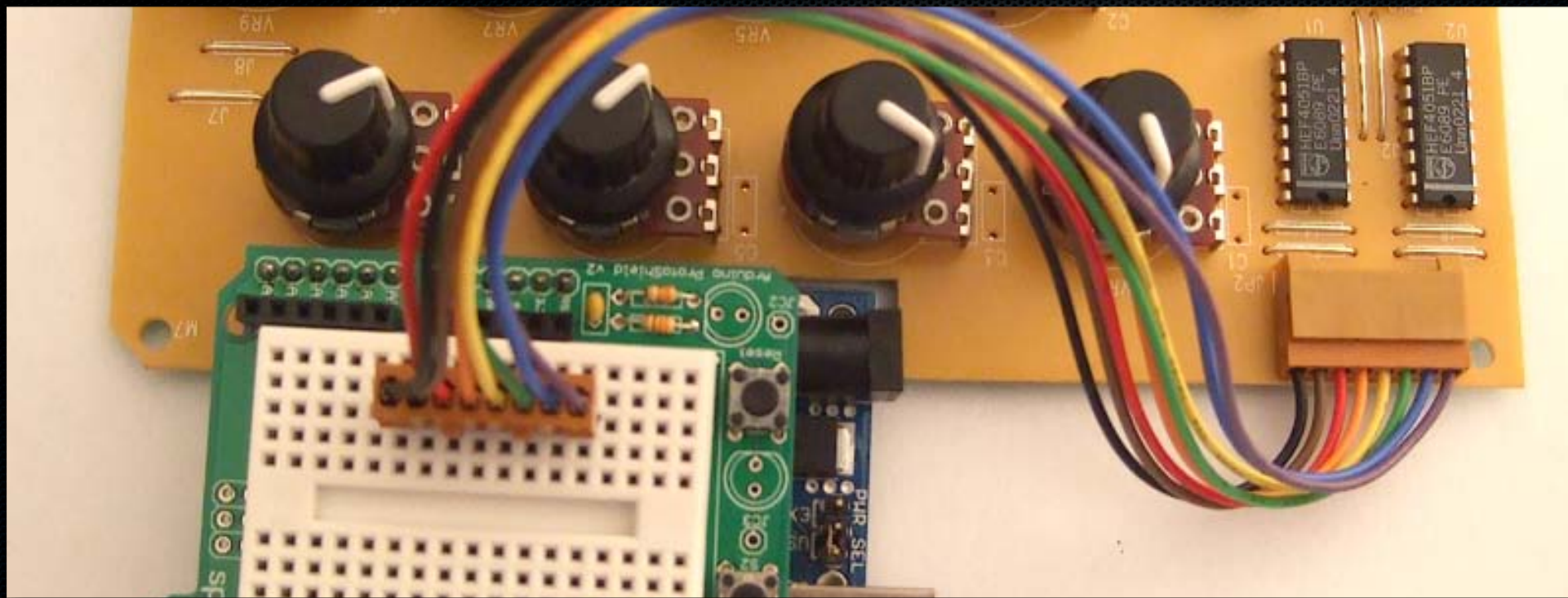
Arduino

Controlo de motores DC com Arduino



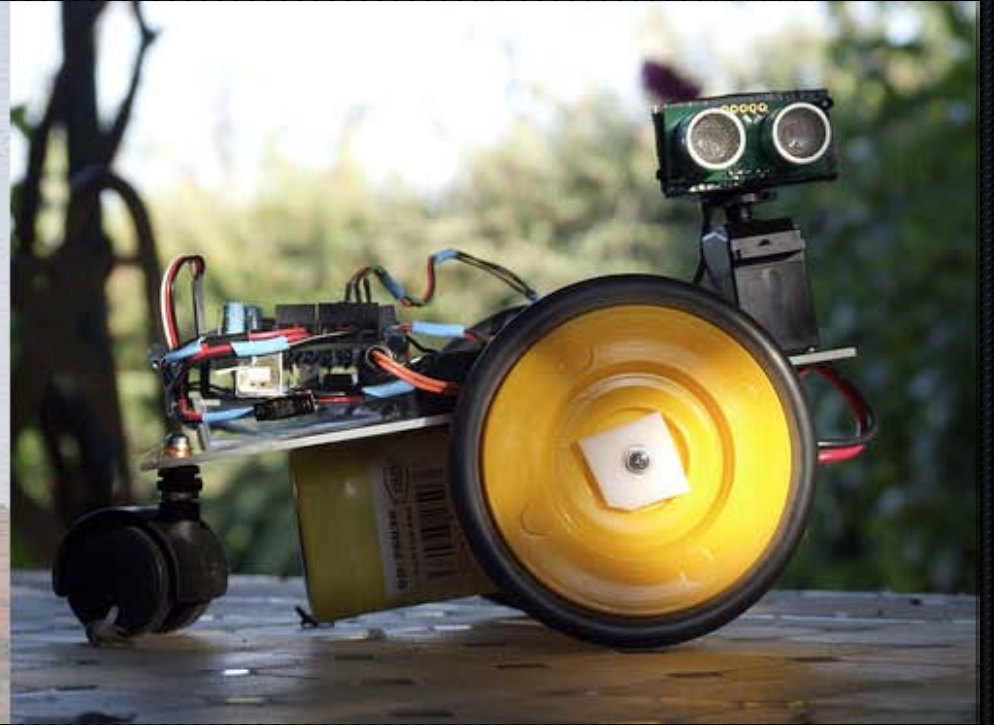
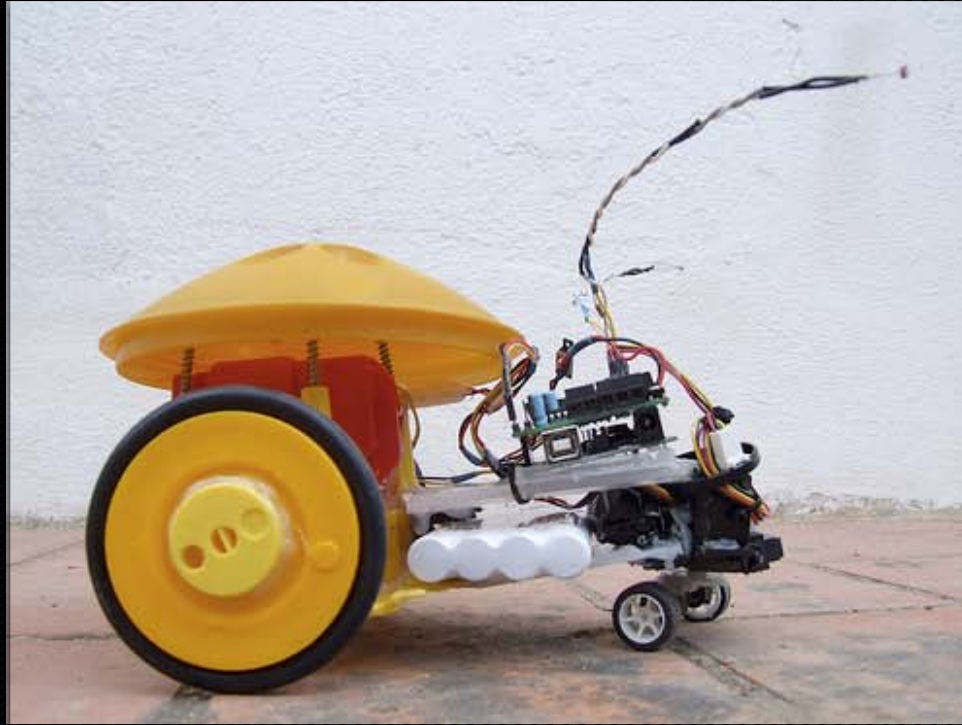
Arduino

Controlo de matriz de LED's via Ethernet



Arduino

Interface MIDI usando hardware *reciclado* @ LCD 2008

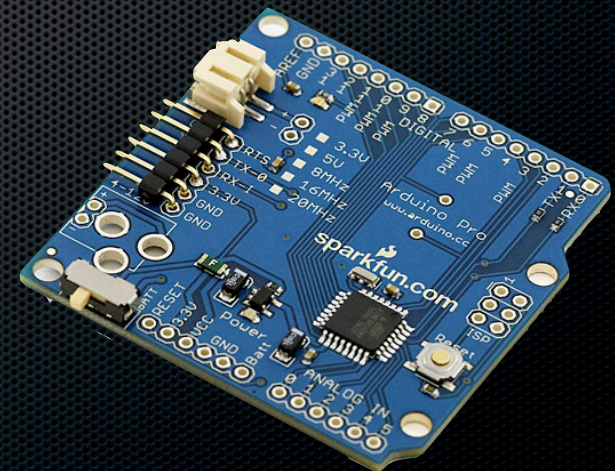
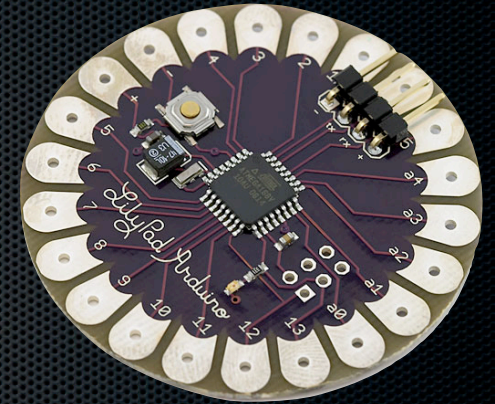
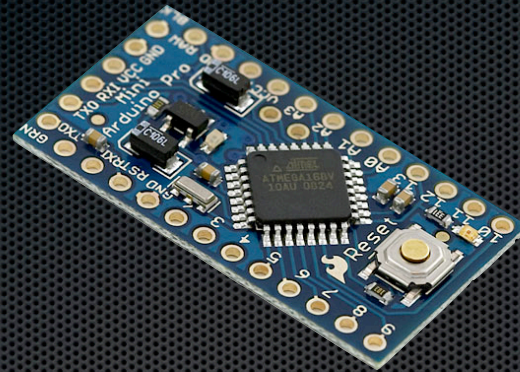


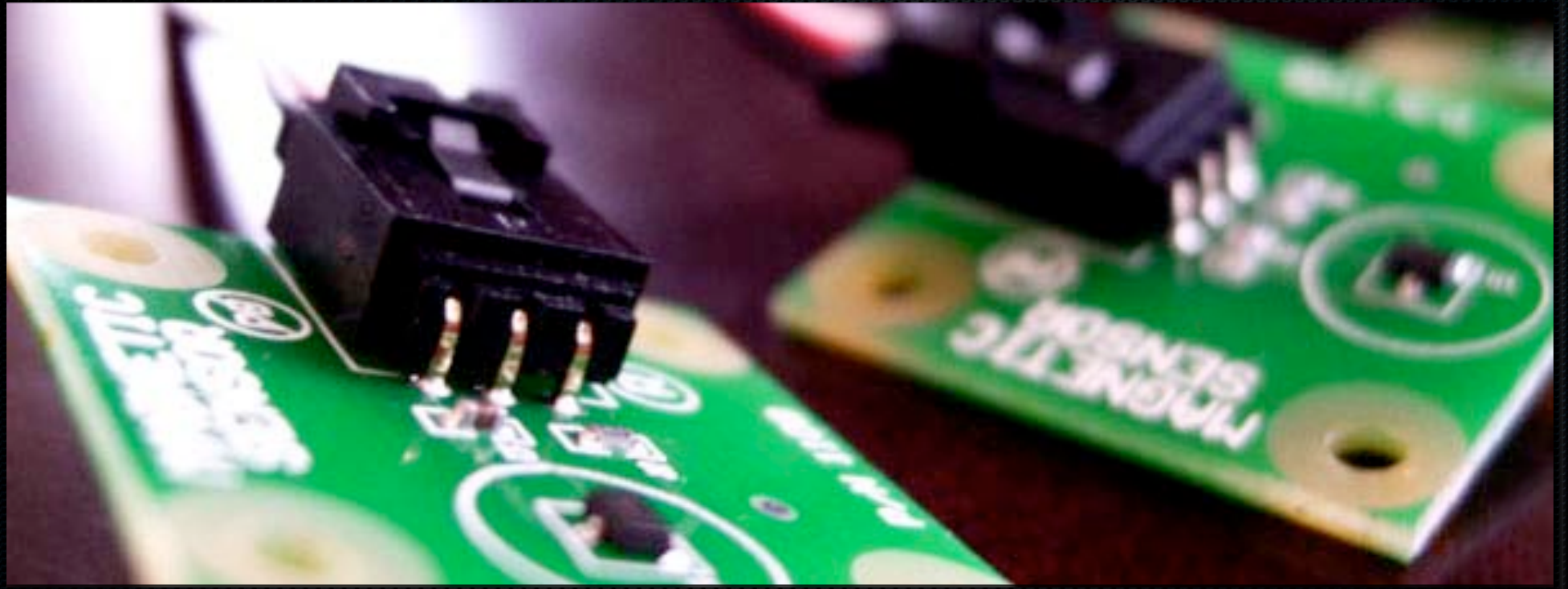
Arduino

Robots criados com o Arduino, <http://lab.guilhermemartins.net>

Arduino: Clones

- Arduino Wee
- Arduino Skinny
- Lilypad
- Freeduino, Sanguino ...



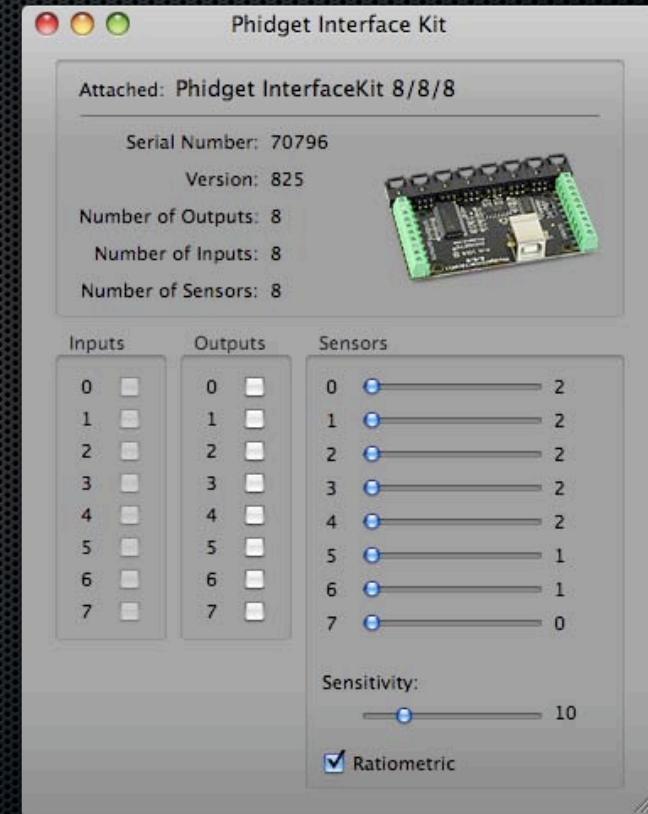


Phidgets

Modelo Plug & Play, pronto a trabalhar em minutos

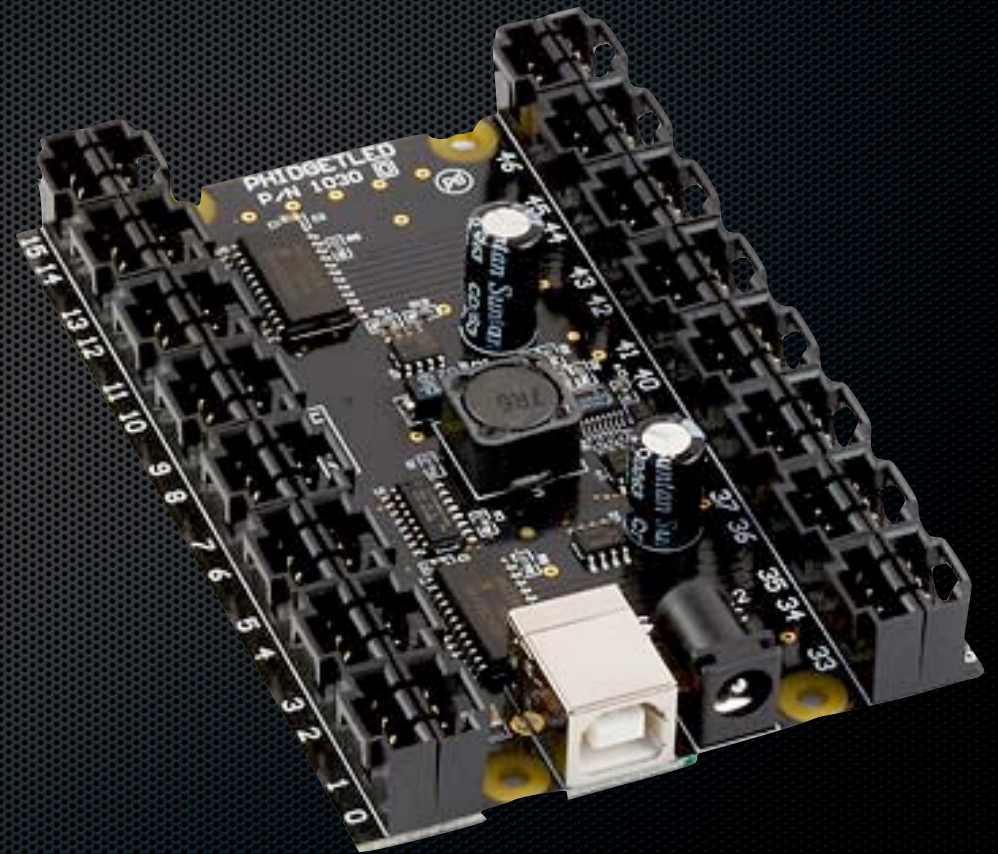
Phidgets

A Phidgets é uma solução de Physical Computing que usa o interface HDI para a aquisição e controlo de hardware.



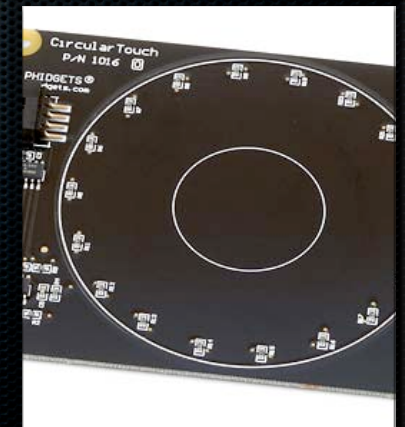
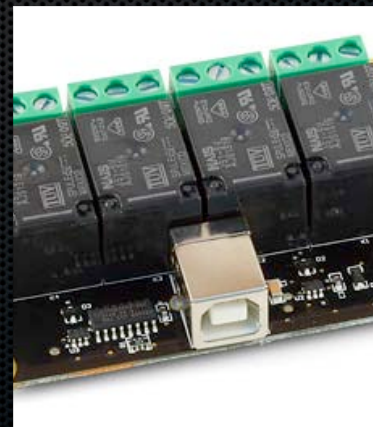
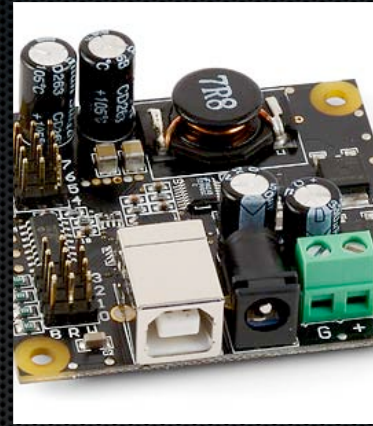
Phidgets: Características

- Plug & Play
- HDI suportado em Win32, Linux, OSX
- Suportado em mais de 20 linguagens
- Sistema modular via USB
- Baixo consumo e baixa latência



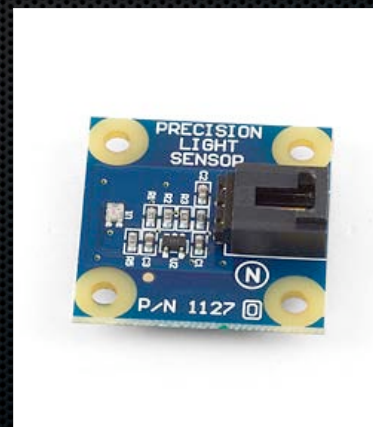
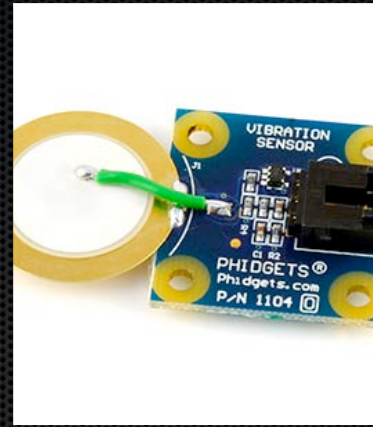
Phidgets: Módulos

- Motores DC, Servos, Unipolar, HC
- Leitura de tags RFID (125kHz)
- Controlo de relês
- Ipod wheel
- Ph, acelerómetros ...

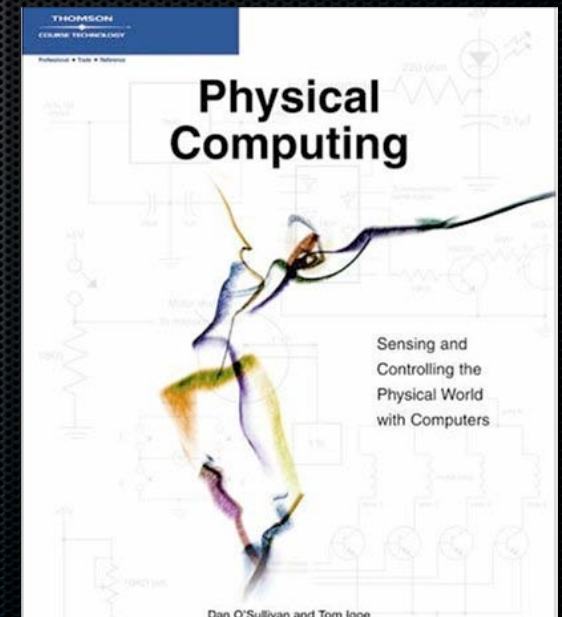
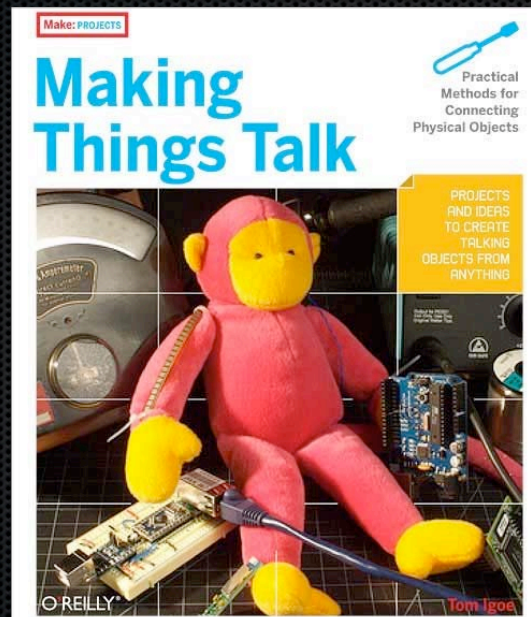
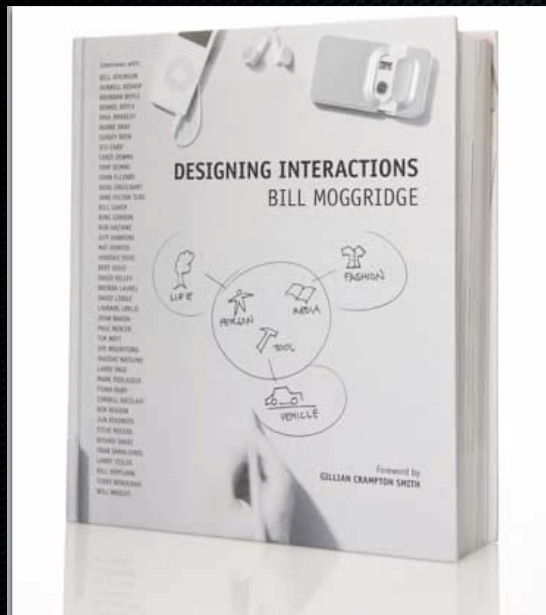


Phidgets: Sensores

- Grandezas eléctricas
- Parâmetros ambientais
- Força
- Campo magnético
- Sensores de toque
- Knobs & Sliders & Joystick



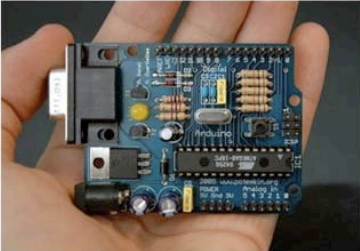
Onde começar: literatura



Onde começar: blogs

Arduino

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Arduino is an open-source based on flexible, easy-to-learn. Intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.

Arduino can sense the environment through a wide variety of sensors and can control lights, motors, and other components. The microcontroller on the board is programmed using the Arduino programming language (based on C++). The development environment can be stand-alone software or running on a computer (e.g., MaxMSP).

The boards can be built by hand or automated. The software can be downloaded from the Arduino website. Reference designs (CAD files) are available under a Creative Commons license, you are free to use them.

Arduino received an Honorary Member status in the Communities section of the IEEE.

Buy an Arduino Board

Download the Arduino Software

Arduino News (archive)

2008.10.24 Arduino 0012 for Linux AMD 64bit available for download: [arduino-0012-linux-amd64.tgz](#)

2008.10.19 Announcing the Arduino Duemilanove, the latest and easiest-to-use version of the basic Arduino USB board.

2008.10.12 Arduino 0012 for Linux 32bit available: [arduino-0012-linux.tgz](#)


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Bionic Arduino – Introduction to Microcontrollers with Arduino

Posted by todbot on November 10th, 2007

Bionic Arduino

Introduction to Microcontrollers with Arduino



Bionic Arduino is a set of four 3-hour classes in November 2007 hosted by Machine Project and taught by Tod E. Kurt. It is an introduction to

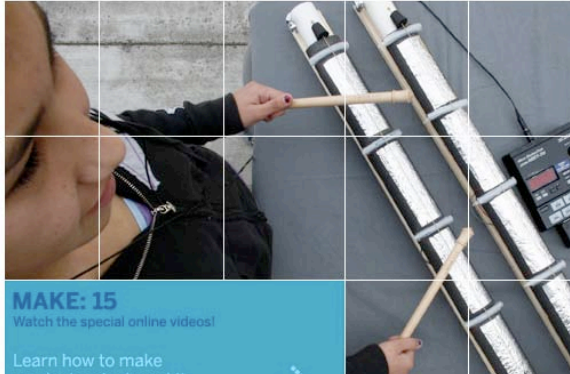
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<http://blog.makezine.com/archive/arduino>

<http://todbot.com/blog/spookyarduino/>

<http://todbot.com/blog/bionicarduino/>

<http://www.arduino.cc/playground/Projects/ArduinoUsers>

<http://www.arduino.cc/playground/Main/InterfacingWithHardware>

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Comercialização de
Arduino, Phidgets, Sparkfun, ...

- arduino@inmotion.pt
- phidgets@inmotion.pt

