Designing Digital Media for the Internet of Things (DDiMIT)

First Workshop - Twittering Infrastructure for Making Basic Internet of Things (TIMBITs)

Nov. 20, 2009 5pm-8pm
rm 728 (7th Floor)
Bissell Building
140 St. George St.
University of Toronto

The workshop is for all consortium members, no matter their past technical experience. The technologies are fairly easy to use and there will be plenty of resources and help available for those who are new to physical computing and prototyping. Our goal will be to play with some simple versions of digital-enabled things, demonstrate how easy it is to develop working prototypes using open source hardware and software, and to use this experience to think together about some of the possibilities.

All parts will be provided. Participants should bring a laptop and be prepared to install a software program on it during the event (the arduino development environment.) Extra laptops will also be on hand.

Rationale: Bruce Sterling has famously announced the next shift in digital media; a movement from an ‘internet of screens’ to an ‘internet of things.’ In this vision, physical objects, in addition to desktop, laptop, or mobile computers, become sources of digital information as well as the forms and interfaces through which we interact with a digital, distributed world. Understanding the range of individual, cultural, and institutional transformations that are made possible by this socio-technical shift requires engaging directly with these technologies, exploring the potentials, and prototyping devices and practices that help us conceptualize new opportunities.

Workshop content: The content will involve learning how to make physical objects send internet messages, using the arduino microcontroller, basic sensors, and the twitter service.

Goals: To increase understanding of the potentials for digitally-enabled things through a process of hands-on experimentation and play; to develop some familiarity with the technical and informational resources available for IOT experimentation and prototyping.

Agenda:
Quick intros (10 min)
review of workshop theme (5 min)
TIMBITs development (2 hours)
   Overview
   Arduino environment
   Basic circuit (blinky-blinky)
   Basic sensor circuits
   Arduino + ethernet + twitter
Show and Tell (20 min)
Open discussion on internet of things, possibilities, ideas
Online presence
Future workshops
Circuits:

**Blink**

Parts: LED
Code: Examples-Digital-Blink
Link: http://arduino.cc/en/Tutorial/Blink

In this very simple example, Arduino will be programmed to blink the LED on pin 13. Related example: http://arduino.cc/en/Tutorial/Blink
Tilt Sensor or push-button

Parts: Tilt sensor; 1Kohm resistor; LED
Code: Examples-Digital-Button-Debounce
Light Sensor

Parts: Light sensor (CdS cell, Light-dependent resistor); 1 Kohm resistor (brown, black, red, gold)
Code: Examples-Analog-AnalogInSerial (examples folder)
Link: http://www.ladyada.net/learn/sensors/cds.html
Temperature Sensor (Thermistor)

Parts: 10k Thermistor, 1Kohm resistor, LED

Code: Code: Examples-Analog-AnalogInSerial (examples folder)

Parts: FSR, 10Kohm resistor, LED
Code: (use code from LadyAda site)
Link: [http://www.ladyada.net/learn/sensors/fsr.html](http://www.ladyada.net/learn/sensors/fsr.html)
Parts: FSR, 10Kohm resistor, LED  
Code: (use PIR code from LadyAda site)  
Link: http://www.ladyada.net/learn/sensors/pir.html