C0ding Workshop Wk05: Yuta Nakayama

Quick Overview:Week05

- **Introduction to Communication/Network**
- ***5-0 Circuit Bending Workshop***
- ***5-1 Sharing Sensor Data over the Internet***
- ***5-2 Motion Tracking using Kinnect***

5-0 Circuit Bending Exercise

1. Identify the operating voltage of the device. (battery/ AC adaptor)
   - Find out Power/GND lines, how they are routed.
   - **Solder+Extend them into the power rows of BreadBoard.**
2. List up INPUTs/OUTPUTs and their functions of the device.
   - INPUT: Buttons, Switches, microphone etc…
   - OUTPUT: Displays, LED, Speaker, motor, etc…
   - Function: alarm, warning, trigger gun shot etc…
3. Solder + Extend INPUT/OUTPUT signals to the bread board.
4. Try if those INPUT/OUTPUT can be triggered from other signals (POWER/GND etc…) .
5. Check if the machine can be operatable by arduino 5v power out.

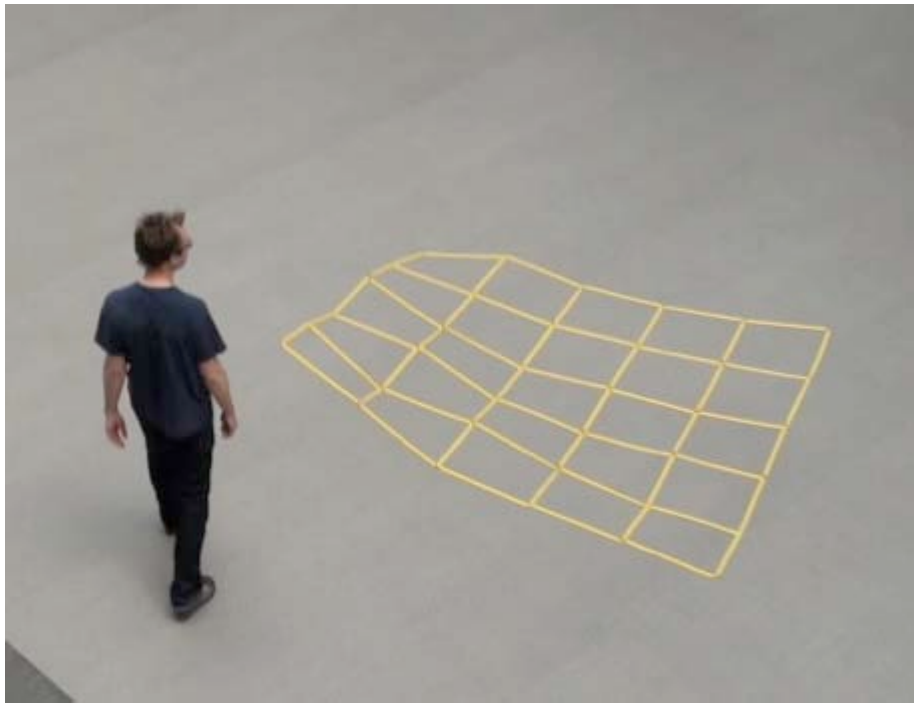
   IF yes -> use arduino input/output to control those signal.

   IF no -> use “FET module” to control
   (avoid plugging into arduino input.)

DON’T BE AFRAID OF BRAKING THE DEVICE!

Internet of the things

- Tele-Present Water (David Bowen)
  http://www.dwbowen.com/tele_water.html
- Tele-Present Wind (David Bowen)
  http://www.dwbowen.com/telewind.html

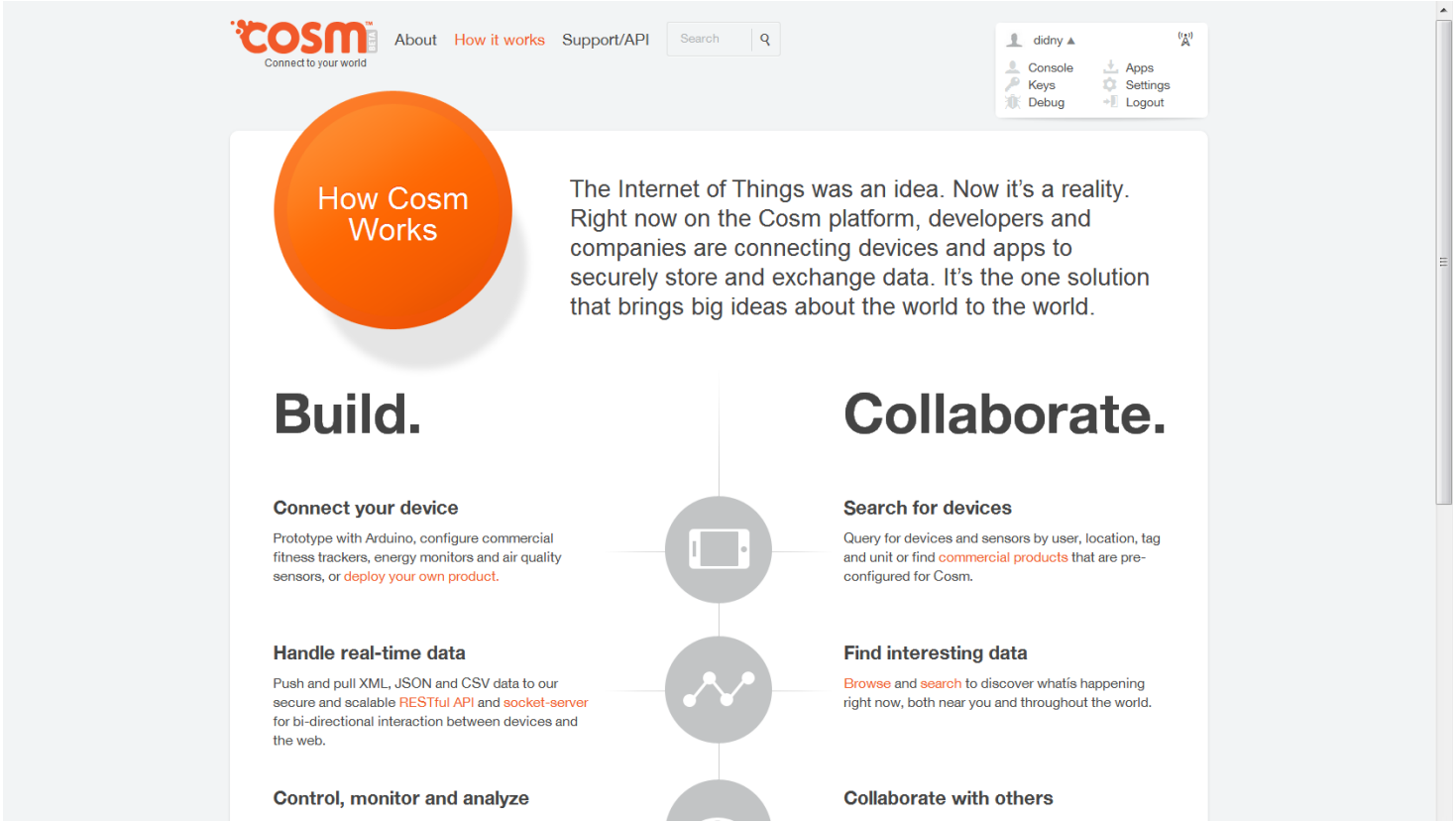


5-1 Arduino <–> Internet

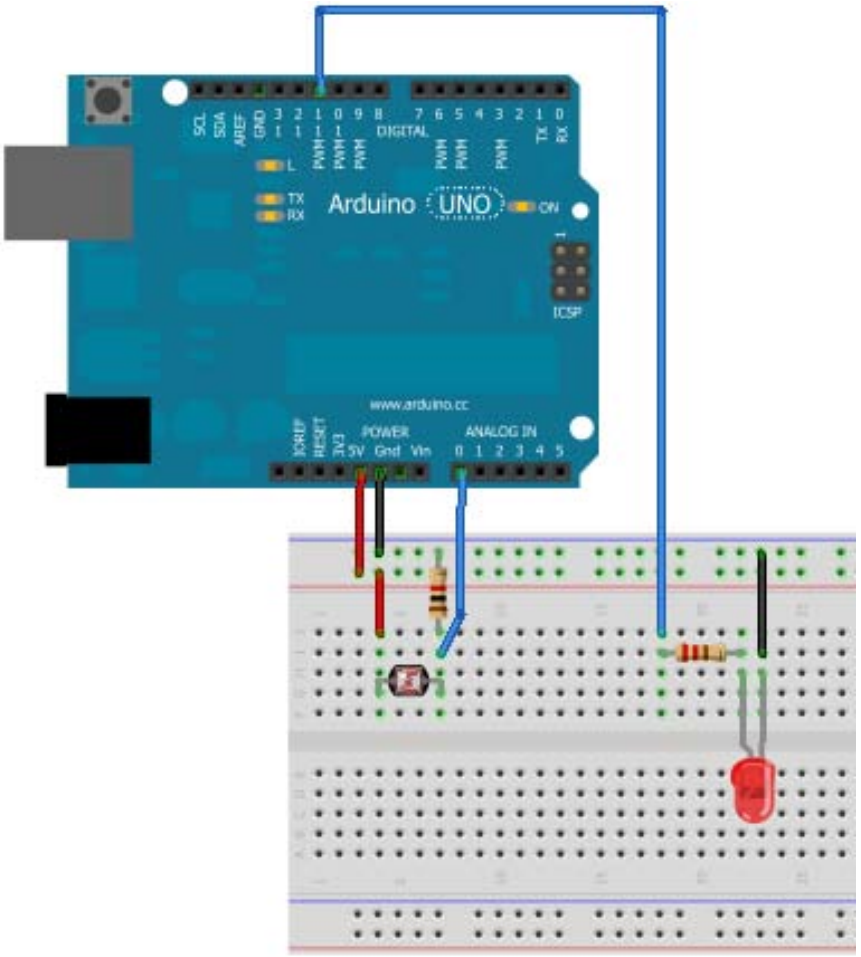
Sharing Sensor data over COSM: https://cosm.com/

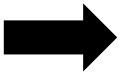
Bio Media Art Workshop(Tama Art University: in JP):

http://yoppa.org/tau_bmaw12



Sharing LightSensor(LDR) data over the Internet

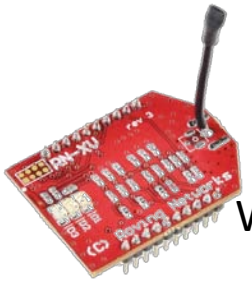




cosm BETA
Connect to your world

Various ways to share sensor data over the Internet

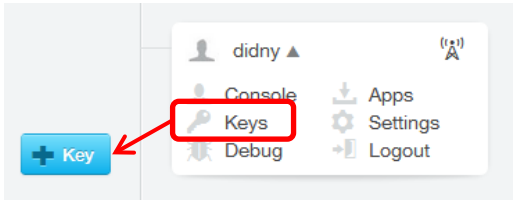
Ethernet Shield

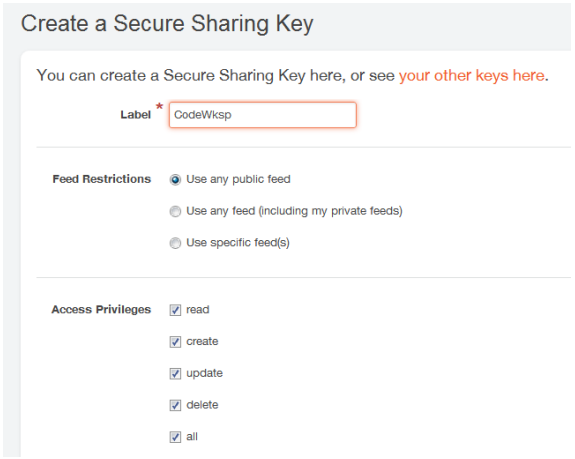


WiFi module

Uploading sensor feed to COSM

1. Create an account on COSM & Log in
2. Create an API Key
   - Label: CodeWksp (or any name)
   - Feed Restrictions: Use any public feed
   - Access Privilege: All





3. Install Cosm-Processing-Library

   https://github.com/jmsaavedra/Cosm-Processing-Library/blob/master/distribution/cosm-1/download/cosm.zip

   Copy an unzipped folder into

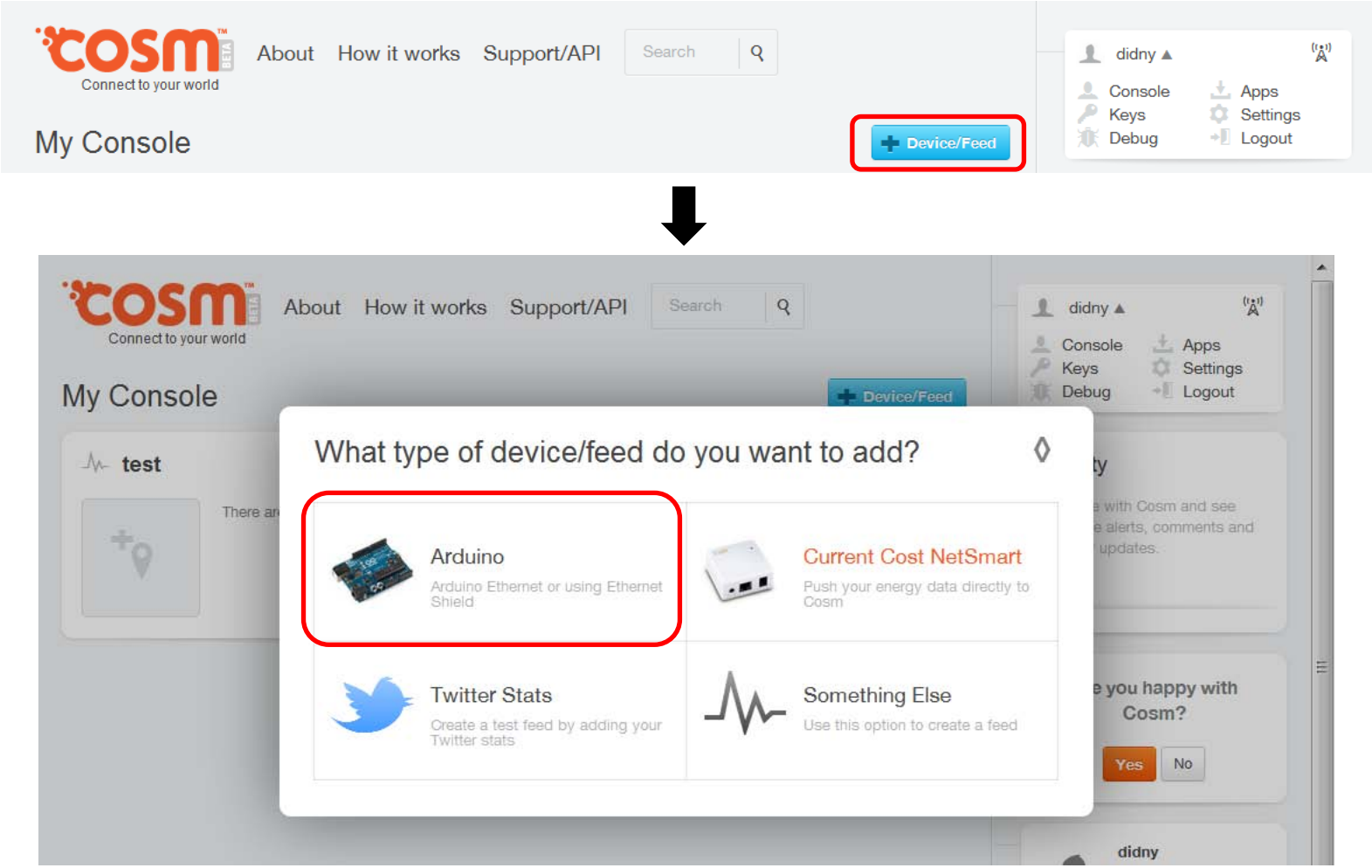
   Windows:

   \Documents\processing\libraries

   Mac:

   /Document/processing/libraries

4. Create a sensor feed on COSM



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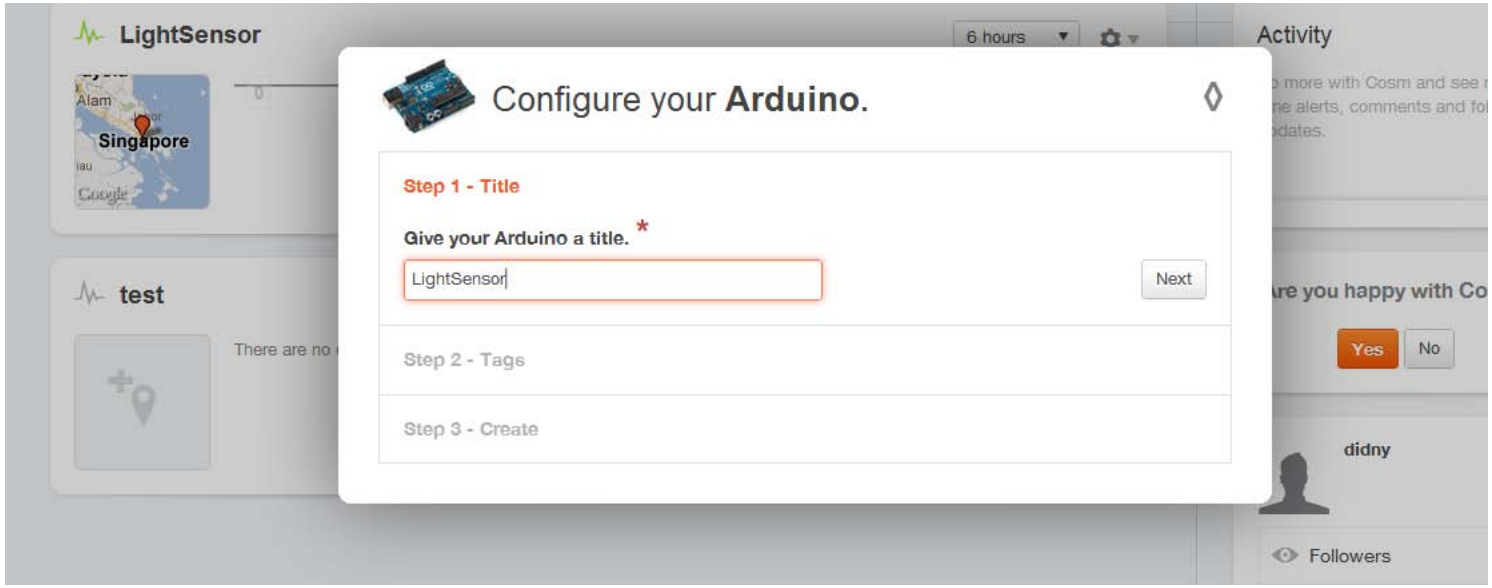
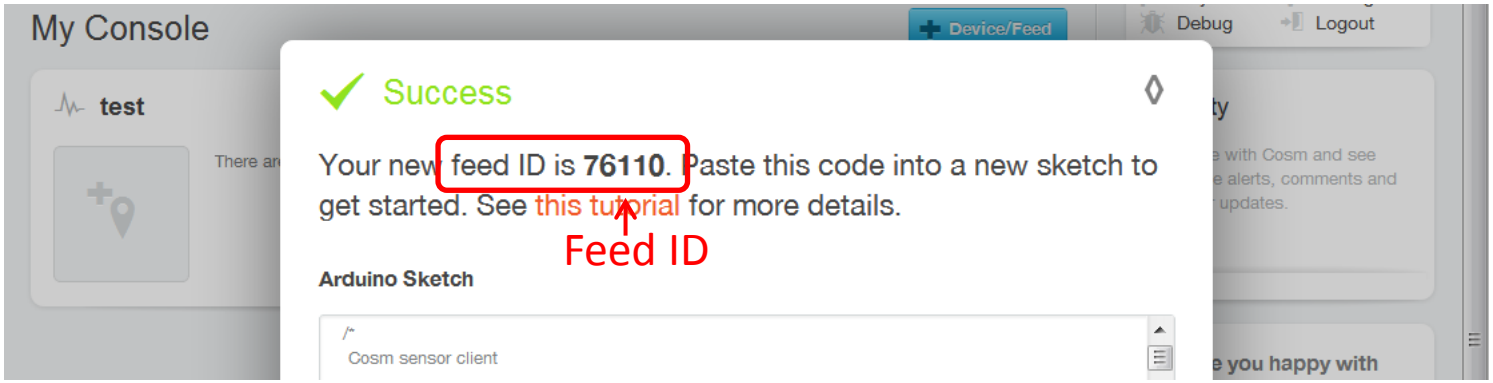
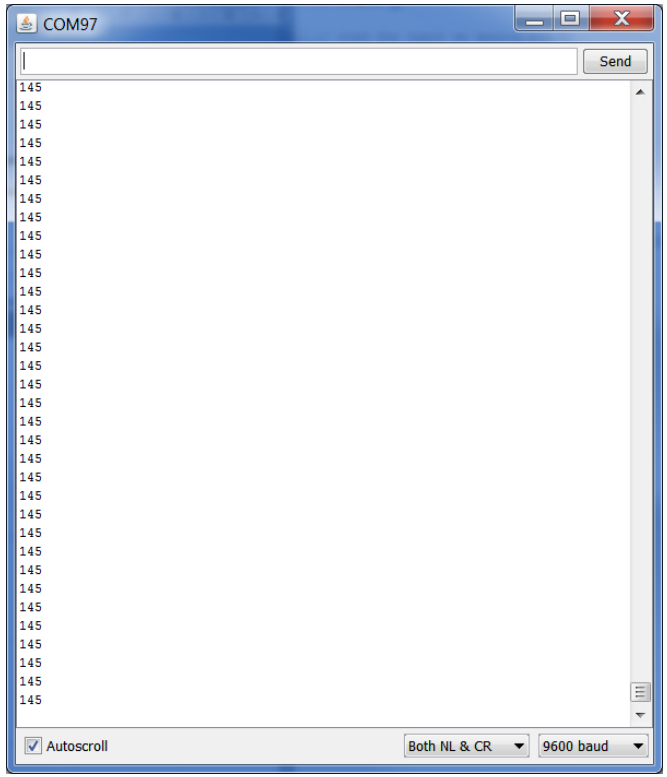




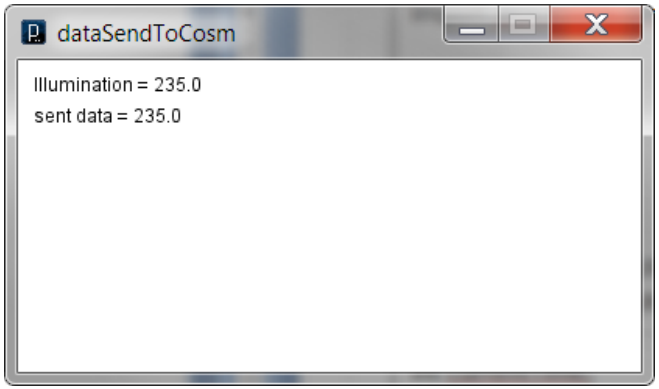
Arduino Code:

\01.dataSendToCosm\arduino\cosmSendReceive\

```
// an LED connected on Pin11.
int led = 11;

// the setup routine runs once when you press reset:
void setup() {
  // initialize the digital pin as an output.
  pinMode(led, OUTPUT);
  Serial.begin(9600);
}

// the loop routine runs over and over again forever:
void loop() {

  // Read the Sensor Input A0 and send a value to the Serial Port.
  int sensorValue = analogRead(A0);
  // print out the value you read:
  Serial.println(sensorValue);

}
```



Processing Code




```
import cosm.*;
DataOut feed;

String apiKey = "YOUR_API_KEY";
String feedId = "YOUR_FEED_ID";

int sendInterval = 1000;

feed = new DataOut(this, apiKey, feedId);

void sendVal() {
  feed.setStream(0, illumination);
  sentData = illumination;
}
```

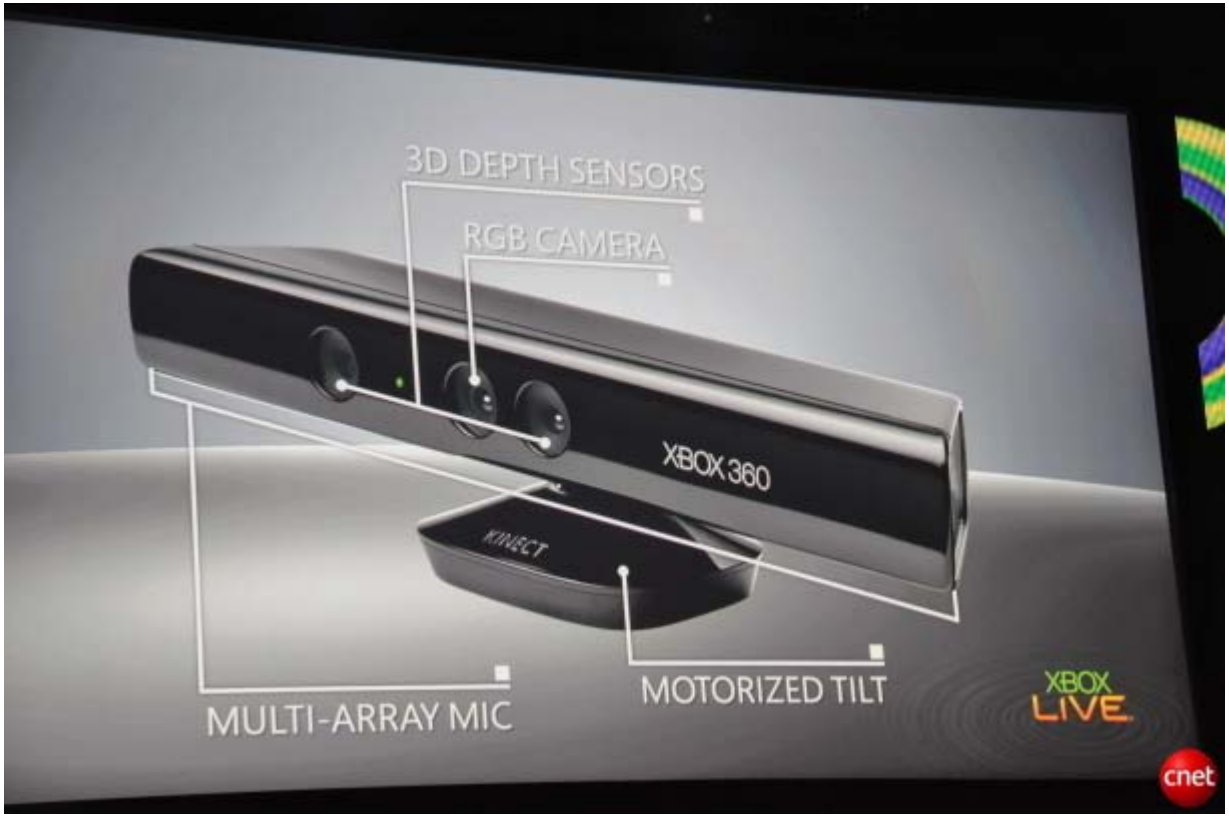
Retrieving data from COSM

```
import cosm.*;
DataIn feed;

String apiKey = "YOUR_API_KEY";
String feedId = "YOUR_FEED_ID";

feed = new DataIn(this, apiKey, feedId);

void requestData() {
  feed.connect();
  feedValues[count] = feed.getValue(0);
  println(feedValues[count]);
  count = ++count % width;

}
```

Motion Tracking

Audience: http://random-international.com/work/audience/

Microsoft Kinnect



http://reviews.cnet.com/8301-21539_7-20007665-10391702.html

Kinnect Hack

http://www.engadget.com/2010/11/19/kinect-hack-creates-worlds-greatest-shadow-puppet-video/

TUIO Kinnect

http://code.google.com/p/tuiokinect/

http://vimeo.com/21525588t

Assignment Wk05

01: Attach a sensor(s) in your home/studio environment and record/share a daily activity over COSM.
(ex. Pressure sensor -> Chair = Chair Usage)

02: Create an object that respond to the value changes of a sensor feed on COSM.