



# Shift + Space

---

Michelle Samson

27037600

CART 353 - Winter 2018

January 30, 2018

Professor Rilla Khaled



## The Concept

An interactive and in-depth experience with one's limited surroundings. The space is marked down to indicate the area the user can occupy and interact with. An abstract form of experiencing space that surrounds us. A video will be shown on a screen via projection, where shapes and certain objects will be falling or moving around in the video, once the user steps into the indicated space, they can interact with the visuals by moving their body in certain motions. The actions of the user will have a reaction with the floating shapes and objects in the video. They can manipulate the surrounding and its abstract forms moving around. This will be an interaction happening in real time.

## Research

The library that will be used and downloaded: Libfreenect for V1 kinect

<https://github.com/OpenKinect/libfreenect>

The website with great tutorial videos to get started <http://shiffman.net/p5/kinect/>

**Making things see** by Greg Borenstein (PDF) book that goes over kinect using the SimpleOpenNI processing library (will be used as reference for how-to on the depth and other functions)

[https://openkinect.org/wiki/Main\\_Page](https://openkinect.org/wiki/Main_Page) the website where the library libfreenect is from, there is other resources and forums with questions and answers

Xbox.com other hardware information about the kinect and comparing between V1 and V2

## Inspirations

Kinect has its pros and cons, and having enjoyed its presence in dance games at home such as dance central and sports and adventure island, the interaction is a different one from the usual remote control environment. I've always wanted to try some new tech related projects with the kinect and having processing in our program just opened up some doors and ideas as to achieve these little goals. Another inspirations is from the fantasy world, such as harry potter and sci fi related worlds of star wars and the witcher game series. These characters manipulate their environment and other beings as well, and I always found it very fascinating, I thought it would be interesting to bring the fantasy world into the creative computing world.

## Similar works

### I. Installation Interactive Kinect + Processing

**Brother System - Mai 2013 Inauguration des Rives de l'Orne  
Vitrine Interactive -**

**Graphisme + Développement + Musique : Brother System (**  
**[www.brother-system.fr](http://www.brother-system.fr) )**

**Organisation Événementielle : Sept de Trèfle ( [www.septdetrefle.fr](http://www.septdetrefle.fr) )**

**France - interactive commercial retail window for passersby to interact with.**

**<https://www.youtube.com/watch?v=KLOB-T1mgdY>**

### II. Kinect Interactive Art Installation

**<https://www.youtube.com/watch?v=wKkMPYmdFHI>**

**Germany's sweetheart Sylvie van der Vaart joined shoppers in Munich's famous Karlsplatz to create a breathtaking piece of interactive art inspired by Kinect. State of the art technology allowed shoppers to take control of the iconic Stachus gate; bringing the ancient medieval structure to life by jumping, dancing, waving and gyrating. Kinect - you are the controller.**

### III. Biborg Lab - Interactive Glitch Art: Motion Sensor with Kinect 1 and Processing

**Augmented Reality using Motion Sensor with Kinect 1 and Processing: great opportunities for interactive and immersive Digital OOH Experiences and Interactive Shop Windows.**

**<https://www.youtube.com/watch?v=xw-7R1tRvdM>**

## Project Scope

I will keep my project in a simple straight line: to achieve the representation of shapes on a screen from a video camera (kinect sensor camera) where the person will stand in front and be able to “touch” the shapes surrounding them in the virtual space while looking at themselves in real time. It will interact with one user only, this will keep the kinect from bugging, due to its known issues with too many users interactive with it all at once. Using the kinect in a coding environment is a new step up for me, as this will be somewhat challenging. Experiencing the kinect in video games is a different set of skills as it becomes buggy and malfunctioning at times, although my own kinect sensor has been pretty good for these past years. The shapes will be simple 2D style, using basic colors.

## Computational model components

The kinect V1 has a range of depth that the kinect can see? (v1) ~0.7–6 meters or 2.3–20 feet. This gives me a decent idea of where to measure and plan and map out the environment for the shapes to move around in. I have ordered the power USB adapter for the kinect so I can begin testing out the hardware and libraries as soon as that item arrives. I want to use shapes, so therefore they will have their own class, the kinect will have its library imported and have a class, the video is going to be called within the kinect class since the kinect is also a camera that can have the event of videoLive, the user will be a class as well, the book mentions parts of the sensor detecting pixel variation, before and after image, updating, the user can be seen as the pixel changer.

There is a list a functions that are nicely mapped out by the resources on how to use and interact with them.

**initDevice()** — start everything (video, depth, IR)

**activateDevice(int)** - activate a specific device when multiple devices are connected

**initVideo()** — start video only

**enableIR(boolean)** — turn on or off the IR camera image (v1 only)

**initDepth()** — start depth only

**enableColorDepth(boolean)** — turn on or off the depth values as color image

**enableMirror(boolean)** — mirror the image and depth data (v1 only)

**PIImage getVideoImage()** — grab the RGB (or IR for v1) video image

**PIImage getDepthImage()** — grab the depth map image

**int[] getRawDepth()** — grab the raw depth data

**float getTilt()** — get the current sensor angle (between 0 and 30 degrees) (v1 only)

**setTilt(float)** — adjust the sensor angle (between 0 and 30 degrees) (v1 only)

I require homebrew to install other packages to allow library libfreenect to be installed. I have acquired the instructions and links for the downloads.

## More websites and resources

<https://structure.io/openni>

<http://shiffman.net/p5/kinect/>

[https://openkinect.org/wiki/Main\\_Page](https://openkinect.org/wiki/Main_Page)

<https://github.com/OpenKinect/libfreenect>

<https://forum.processing.org/two/categories/kinect>

**[Making Things See: 3D vision with Kinect, Processing, Arduino, and MakerBot](#)**

[https://www.amazon.ca/Making-Things-See-Processing-MakerBot-ebook/dp/B00DBIEZH2/ref=tmm\\_kin\\_swatch\\_0?\\_encoding=UTF8&qid=1517261222&sr=8-1-fkmr0](https://www.amazon.ca/Making-Things-See-Processing-MakerBot-ebook/dp/B00DBIEZH2/ref=tmm_kin_swatch_0?_encoding=UTF8&qid=1517261222&sr=8-1-fkmr0)

<https://brew.sh/>

[https://openkinect.org/wiki/Getting\\_Started#Manual\\_Build\\_under\\_OSX](https://openkinect.org/wiki/Getting_Started#Manual_Build_under_OSX)