



PRESENTS

The title "REACTIVE SPACE" is centered over a cluster of abstract, translucent pink and purple geometric shapes, including triangles and a small cube, set against a light gray background.

# REACTIVE SPACE

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IMD 3901 B - Design Studio 3

James Acres

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Ryan | Zara | Marco | Matthew

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# PROJECT OVERVIEW

We are creating a digital, interactive art installation for a high traffic, public area that allows for both passive and active interaction. We want to use the people passing through the space to create pseudo-random content within the installation. Active users can then interact with this content in real-time.

The experience will be centered on a large projection screen. It will cycle through various graphical scenes (dynamic pieces of digital art) simulated in real-time. The displayed content will be similar to an audio visualizer in that it will take data from multiple sources (ex. User interactions) and display them graphically in an artistic way. In its rest state, the system will play back previous interactions to create interesting images which should entice new users.

We will use cameras to detect people entering the space and each person will generate a unique item in the scene, such as a particle, that will appear on the screen. These items will play a larger part in the scene than any system created or controlled graphics, and they will move across the screen based on the person's direction of movement through the space. They will also drive user interaction by affecting the scene in interesting ways, such as sound or graphics, whenever the items are affected by active user interaction.

The interaction will come from active users in front of the screen using their body movement to influence the scene.

# TECHNICAL REQUIREMENTS

## Software and Technology

- OpenFrameworks 0.8.0 with OpenCV and Kinect Addons
- Visual Studio 2012
- Adobe Photoshop and Illustrator CS5
- FL Studio 11

## Hardware

- 1 Kinect for Windows
- One computer with:
  - 4 USB connections
  - output for one monitor/projector
- 2 web cameras
- 1 projector
- 2 50ft. USB extension cables
- 2 speakers
- Sound mixer and appropriate cables

## Materials and Tools

- One large projection screen
- Tape

# FEATURE LIST

## User Features

Use body movement to influence graphics

Use body movement to manipulate of sound

Entering the space generates simulation items

Moving through the space affects the simulation

## Description

User will stand in front of the screen and use their limbs to manipulate the simulation

The sounds in the simulation will change depending on users manipulations of the graphics

When anybody walks in through the space a new graphics item is generated in the simulation

Peoples' movement through the space affect the items in the simulation that were generated upon entry

## Design Features

4 unique graphic simulations (scenes)

20 non-intrusive sound effects

Unique art assets (amount depends on final scene designs)

## Description

Multiple artistic scenes that incorporate interaction data from active and passive users

Approximately 5 sounds per scene.  
Sounds will be similar to the “21 Swings” project in Montreal

Created with design software to be displayed in the various simulations

## **Technical Features**

Skeletal movement data

## **Description**

Tracking hands and feet through Kinect for up to 2 active users

Detect passive users' movement

Use vector cloud data through OpenCV and web cameras to read user movement through the space

Detect passive user presence

Blob detection with OpenCV and we cameras to track users and their movements through the space

Visualizer Program

OpenFrameworks program which cycles scenes and visualizes our simulations

# MILESTONES

○ Milestone 1	January 31 2014
<ul style="list-style-type: none"><li>• Preliminary technical research</li><li>• Preliminary scene designs (4-6 mock-ups)</li><li>• Running OpenFrameworks project</li><li>• Preliminary code design</li><li>• Look into acquiring necessary equipment</li></ul>	
○ Milestone 2	February 2 2014
<ul style="list-style-type: none"><li>• Scene designs finalized and chosen</li><li>• Finished design for code</li><li>• Simple project with simulated user input for scene testing (mouse)</li></ul>	
○ Milestone 3	February 14 2014
<ul style="list-style-type: none"><li>• Art assets created for all scenes</li><li>• Varied interaction for each scene</li><li>• Preliminary designs for audio</li></ul>	
○ Milestone 4 - Submission	February 28 2014
<ul style="list-style-type: none"><li>• Project reading raw Kinect data</li><li>• Fully implemented set of scenes with distinct looks</li><li>• All audio samples recorded/acquired</li></ul>	
○ Milestone 5	March 7 2014
<ul style="list-style-type: none"><li>• Kinect data influences simulations</li><li>• Scenes with distinct Kinect interactions</li><li>• Preliminary audio functionality in scenes</li></ul>	

## ○ Milestone 6 - Working Prototype Demo

March 14 2014

- Kinect functionality complete and debugged
- Audio fully implemented in scenes

## ○ Milestone 7

March 21 2014

- OpenCV reading data from webcams

## ○ Milestone 8

April 2 2014

- Webcam data creates items within simulation

## ○ Milestone 9

April 16 2014

- Project fully running
- Project complete and debugged

# TEAM MEMBERS & ROLES

Ryan Bottriell



Lead Developer

Zara Tooth



Developer, Manager

Marco Brito



Lead Designer

Matthew Fouriner



Designer, Developer



All members were present and involved for the writing of this document