



| Project Documentation

| Project Members

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Physical Computing I & II

INDEX

Project Information	4
General Information	
Abstract	
Summary	
Purpose	
Space and Limit	
Overview	
Environment Setup	8
Environment	
Installation Guide	11
Step-by-step	
Code Overview	13
Class diagram	
Libraries	
Team Members and Roles	16
Special thanks	

Project Information

| **Project Title**

Wondrous

| **Date**

March 13rd 2014

| **Equipment**

Xbox Kinect, Epson Projector, Stereo System

| **Software Used**

Processing 2.1.1

| **Operating System**

Windows 7

Project Abstract

Wondrous is an immersive interactive installation that will enchant users. Flying kites is a century-old tradition that has an international and ageless appeal. The kites will evoke childhood memories and bring the user to a happy yet serene place.

Project Summary

Wondrous allows users who step within the installation to control their very own digital kite. The serene starry night sky will be projected on the ceiling, giving the user the feeling that they are outside. Using input from the Kinect along with Processing software, the user will be tracked and represented with a kite on the screen that will be projected on the ceiling. Each user will have their own kite and as they move around the kite will follow them, much like a user would control a kite in the sky. If the user hovers their kite over a star that star will disappear but begin to form a constellation. There are a series of constellations in the sky that correspond with the twelve zodiac symbols.

Project Purpose

Wondrous is an interactive installation that will bring users a sense of peace and happiness. Kites have an ageless and international appeal that will bring users back to a happier time. The whimsical nature of Wondrous will allow the users to not only interact with the environment, but also with each other.

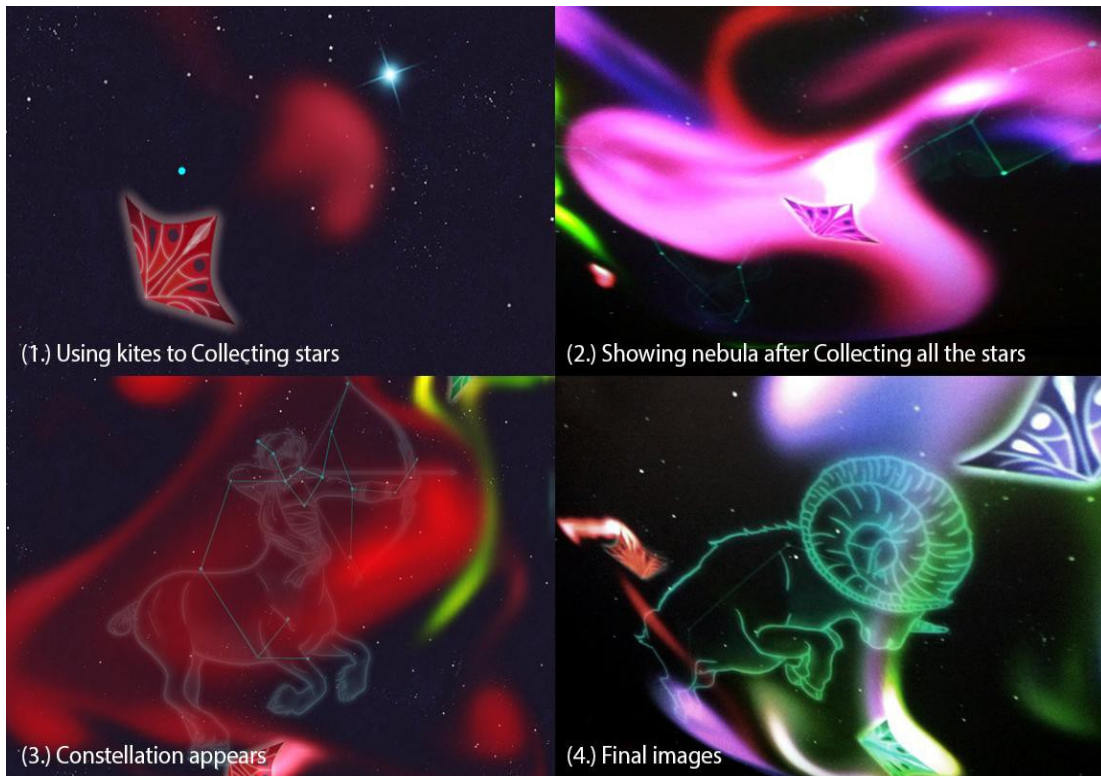
Project Limit

Wondrous is an expandable environment that can cater to multiple users. Based on the space that we have been given, we are limited to the amount of users. Ideally six users yields the best results, but the system can handle up to 10. Also with only using a single Kinect we are limited as well.

Overview

I. Night mode

Night mode will allow users to control their own kite in the night sky where they will be able to connect stars to create constellations.



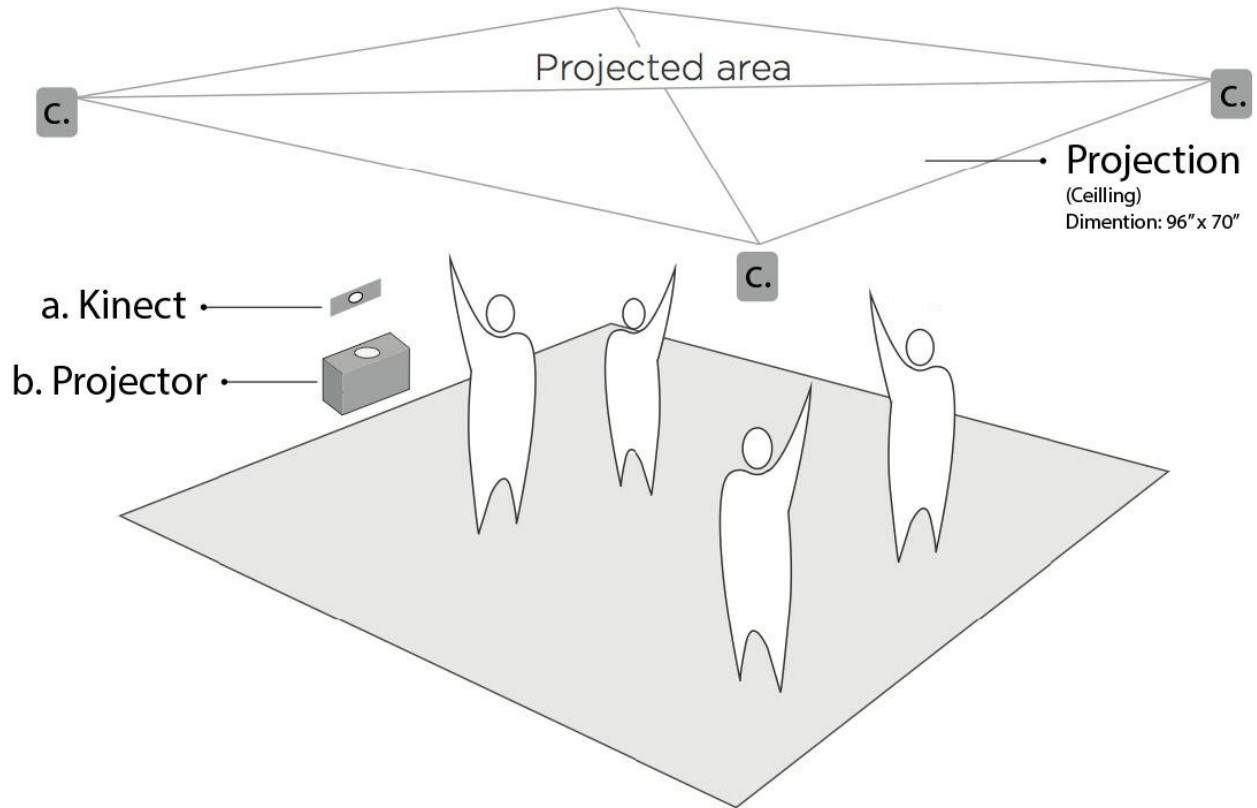
II. Day mode

Day mode is more of a “screensaver” type mode that is not interactive but it displays kites that represent people who are tweeting with the words #SCAD, #SCADPad, etc.



Environment Setup

| Environment



| Equipment

a. Kinect



b. Epson PowerLite 410W

Epson PowerLite 410W



c. Stereo system



Installation Guide

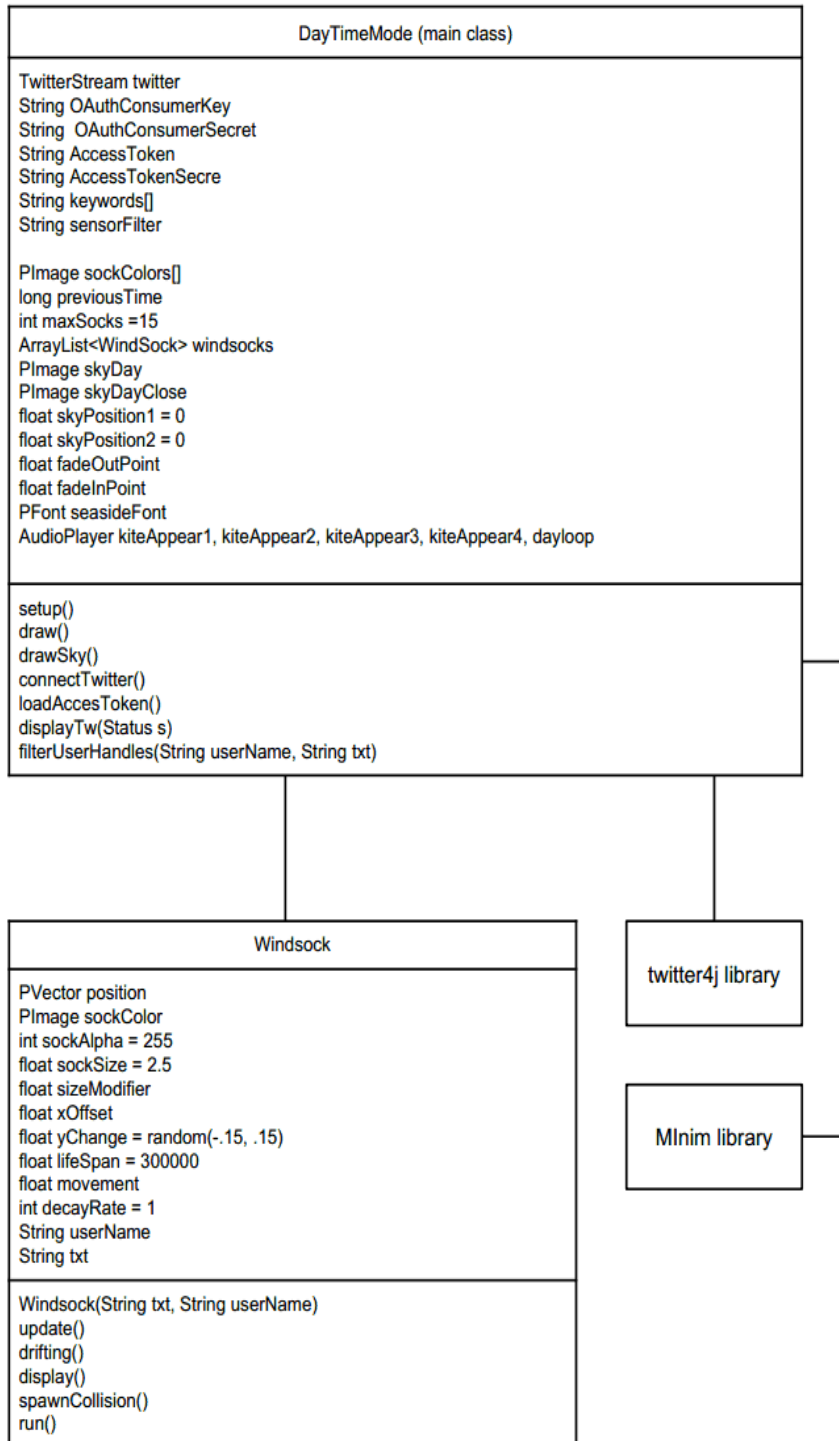
Step-by-step

1. Connect and position the Kinect sensor
2. Add and Install all the libraries
3. Locate the Wondrous folder and open it in Processing
4. Open Wondrous_3.6_showCase > Main_3_6 > Main_3_6.pde
5. Click on “run”
6. Screen will look like below:

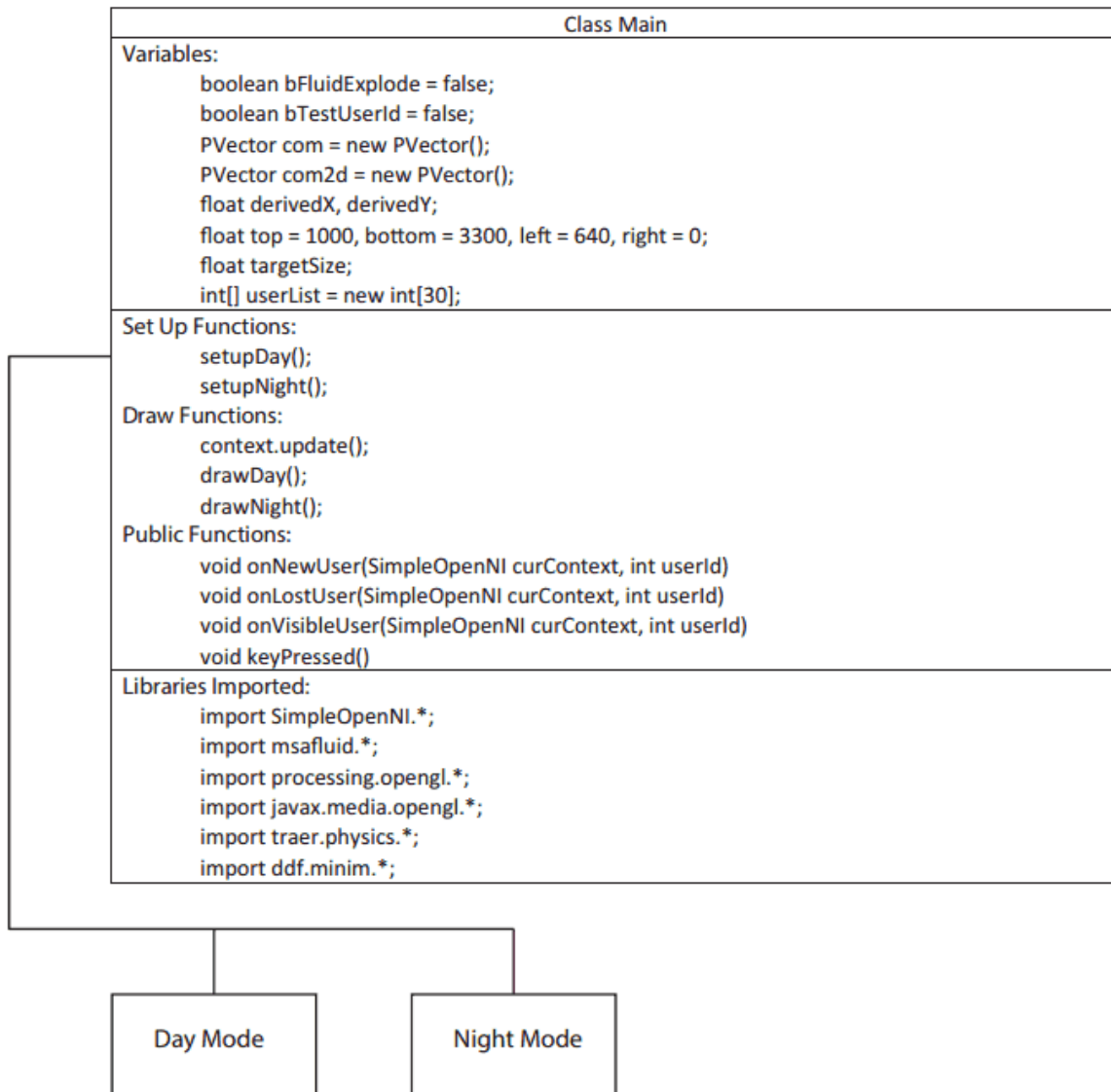


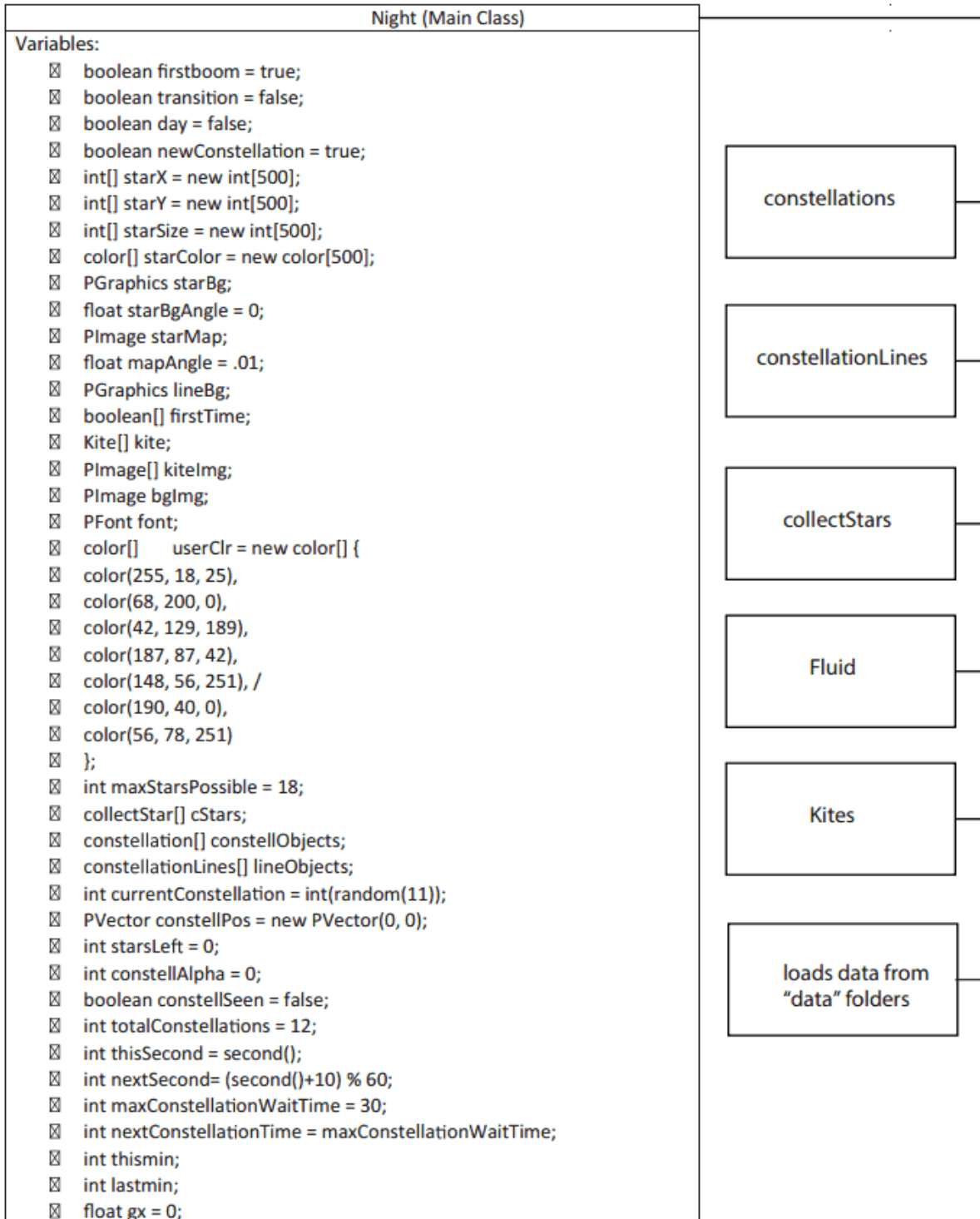
Code Overview

Class diagram - Day Mode



| Class diagram - Night Mode





class collectStar
<p>Constructor: collectStar(String imagePrefix, int count)</p>
<p>Public Class Variables:</p> <ul style="list-style-type: none"> • int imageCount; • float frame; • PImage[] img_collectStar; • int alpha = 0; • int blinkTimer = int(random(0, 89)); • float scale = random(0.4, 0.9); • float rotation = random(0, 359); • float rotationSpeed = 0.5; • boolean visible = true; • PVector cStarPos = new PVector(0, 0);
<p>Functions:</p> <ul style="list-style-type: none"> • void cStarDraw(int starInd, float imgPosX, float imgPosY, float starPosX, float starPosY) • void drawStar(float posX, float posY) • void starKiteCollision(int collideX, int collideY) • void cStarUpdatePoint(float newCollideX, float newCollideY) • void refreshStar()

Class constellationLines
<p>Variables:</p> <ul style="list-style-type: none"> • int alpha = 0; • boolean visible = true; • float lineSizeX = 0; • float lineSizeY = 0; • float lineRateX = 0; • float lineRateY = 0;
<p>Functions:</p> <ul style="list-style-type: none"> • void drawLine(int starPoint1, int starPoint2, float point1X, float point1Y, float point2X, float point2Y)

<ul style="list-style-type: none"> • float gy = 0; • int[] userIdTable = new int[7];
Functions: <ul style="list-style-type: none"> • void userIdTable() • void setupNight() • void drawKite(int userId) • void changeGravityDirection() • boolean checkRaisedArm(int userID) • void kiteStarCollision(int kIndex) • void changeConstellation() • void displayConstellationAndStars(PImage img)

Class constellation
Constructor: constellation(String fileName, int totalStars, int totalLines)
Public Class Variables: <ul style="list-style-type: none"> • PVector[] array_constellStar = new PVector[18]; • PVector[] array_constellLineP1 = new PVector[18]; • PVector[] array_constellLineP2 = new PVector[18]; • int[] array_constellLineStar1 = new int[18]; • int[] array_constellLineStar2 = new int[18]; • String[] lines; • PImage img_constellation; • int maxStars = 0; • int maxLines = 0;

| Resource - Libraries

This program works with the current version of libraries. Libraries are often updated and using updated version may conflict or may not be compatible with the existing program. The program may have to be modified to work with updated libraries.

Minim - <http://code.compartmental.net/tools/minim/>

Simple-openNI - <https://code.google.com/p/simple-openni/>

TRAER.Physics - <http://murderandcreate.com/physics/>

Twittwer4J - <http://twitter4j.org/en/index.html>

MSAFluid - http://memo.tv/archive/msafluid_for_processing_v1_3

Team Members

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Lara Chen



Candace Hinz



Hong Zhu



Sean Mihaly



Zachary Rudolph



Andy Simons



Chenyuan(Leo) Cui



Shawna Wright



Vicki Lau



William Fagan



Zachary Londres

| Team Roles

Lara Chen

Project Lead

Lara Chen is a native of Taipei, Taiwan. She has a B.F.A. in Industrial Design from Shih-Chien University, and is an M.A. Candidate in Interactive Design at the Savannah College of Art and Design. She has worked with multiple media as an artist and designer. Her current focus is on web based media and interactive design. As a designer and artist, she strives to innovate through art and create elegant designs. Find more about her: Larachen.com

Candace Hinz

Design Lead

Candace Hinz is going to complete her B.F.A. in Interactive Design from the Savannah College of Art and Design in Fall 2014. She focuses on not only design but also technical details in her projects. She has experience with web design, game design, and physical computing. With her unique set of skills she has created a dynamic body of work. Find more about her: Candacehinz.com

Julia Hong Zhu

User Experience Lead

Hong Zhu is a native of Beijing, China. She has a B.E. in Media Technology from the Beijing University of Technology and is an M.F.A Candidate in Interactive Design at the Savannah College of Art and Design. Hong's work focuses both on Interaction Design and Visual Design and is applied across multiple platforms including mobile, web and physical spaces. Her desire is to bring to the world convenience, cheerfulness, and happiness through her art.

Find more about her: juliahongzhu.com

Sean Mihaly**Interaction Lead**

Sean Mihaly is an Interactive Designer seeking to receive his B.F.A. in June of 2014. He possesses a wide range of talents from graphic design, web/mobile design, programming, project management, and more. As an Interactive Designer, Sean strives to design elegant, innovative systems and services that users will enjoy. To see more of Sean's work, visit SeanMihaly.com

Zachary Rudolph**Programmer Lead**

A senior undergraduate at SCAD who is studying for the Interactive Game Design program. Zachary worked as 'Wondrous' program lead and contributed in discussions on the design of the project, along with contributing and helping manage the code itself with a team of other programmers. Being focused on the Interactive side of game design, he worked mainly on the collection of stars within Wondrous and the organization/creation of data for the 12 constellations within Night Mode.

Andy Simons**Programmer/ Interaction Designer**

Andy is a Game Designer and Writer expecting to graduate in Winter 2015. He's also a skilled programmer with experience in multiple languages. He wants to make games with good stories that build on the underlying mechanics. To see his other work, visit andy/simons.wix.com/andrew-simons

Chenyuan Cui**Supervising Programmer**

Chenyuan(Leo) Cui is a native of Suzhou, China. He has a B.E. in Digital Media Technology from Zhejiang University and is an M.F.A Candidate in Interactive Design

at the Savannah College of Art and Design. As an artist and designer, Leo's work focuses both on Interaction Design and Creative Development. As a developer, he has worked on multiple platforms include web, mobile and physical computing, and is conversant in multiple programming languages.

Find more about him: LeoCui.com

Shawna Wright

Visual Designer/ Interaction Designer

Shawna Wright is a soon to be holder of a B.F.A. in Game design. She hopes to focus on interface design for video games and eventually get into art direction. She loves illustrating and can be frequently seen taking breaks from drawing to draw more.

William Fagan

Programmer/ Interaction Designer

William Fagan majors in Interactive Designer and Game Development, currently pursuing his Master degree at Savannah College of Art Design.

Vicki Lau

Motion Designer/ Sound Designer

Having graduated from Singapore Polytechnic as one of the top 7 institutional medallists with a Diploma in Digital Media (Computer-Generated Effects), Vicki Lau is currently finishing her B.F.A. in Visual Effects at the Savannah College of Art & Design. With experience and skills in all areas of film production, Vicki is a multi-dimensional artist able to produce, direct, supervise and perform post-production tasks that includes sound design and visual effects. Her first directorial debut "*The Painter*" recently got selected to screen at the 2014 Palm Beach International Film Festival. She has also worked on shows such as AMC's "*The Walking Dead*" Season 4, NBC's "*Dracula*" and on Cartoon Network's "*Powerpuff Girls Special*

Official website: <http://lauvicki.com>

IMDb: <http://www.imdb.com/name/nm5130924/>

Zack Londres

Programmer/ Interaction Designer

Currently a sophomore in SCAD, Zachary has been making video games since the beginning of high school. He is a skilled programmer and technical artist. Zachary is always striving to do things that no one has ever seen before. With a focus on technical art and interaction, innovation and invention are the main characteristics of Zachary's work.

| Special thanks

In addition, we would like to thank our professor **Josephine Leong**. Without her advice and guidance, it is impossible to create the Wondrous project. Also, we want to thank our technical staff **Neil Short** for all the technical support. Especially thanks the director of Collaborative Learning Center **Josh Lind** for granting us his time and make this project come true.

Many Thanks!