Eric Rennie
ENT 4499 - Culmination
February 17, 2021

Project Description

In my time at City Tech, I have learned several programming languages and how computers can intersect with the physical world, creating immersive experiences and interactive human-digital systems. My goal when I graduate is to further my education and obtain an engineering degree in emerging media technologies. For my culmination project, I would like to strengthen my portfolio by programming an interactive video mirror experience with bees. When a person enters the line of sight of the camera, the program uses the person's coordinate data to send a swarm of bees their way.

By creating this interactive human-digital system, I will gain real-life experience with physical computing by programming a digital system to take varying physical data in order to create a desired output. It will also give me experience creating prototypes, conducting tests, troubleshooting, and adjusting the program accordingly based on user feedback.

Methods

In the program's normal state, the bees will be buzzing around as normal. When a person passes into the camera's line of sight, their physical positioning data enters into the program. The bees will begin swarming around the person and following their location and position until they are out of the camera's line of sight. Once the person is out of the camera's line of sight, the video will return to the default, which is video of the bees buzzing around as normal.

I will be using p5.js, a JavaScript library for creative coding, as the server in which I will be creating the interactive video mirror. This is where I will be assembling my patches of code and writing the instructions for the program. In order to estimate real-time human pose information within the live video input, I will be utilizing a machine learning model known as "PoseNet." I will be referencing the p5.js book, "Getting started with p5.js," as well as YouTube videos in order to complete this project. Additionally, I will be researching and accessing information throughout the Internet written by professionals of media computation and physical computing.

Project Deliverables

- Signed proposal from technical advisor
- Schedule
- OpenLab E-Portfolio
- Poster
- Materials Estimate
- Research notes, including programming, prototypes, tests, and troubleshooting

- Prototype
- Tests
- Troubleshooting
- Photo archive of program throughout various stages such as programming, prototyping, testing, and troubleshooting
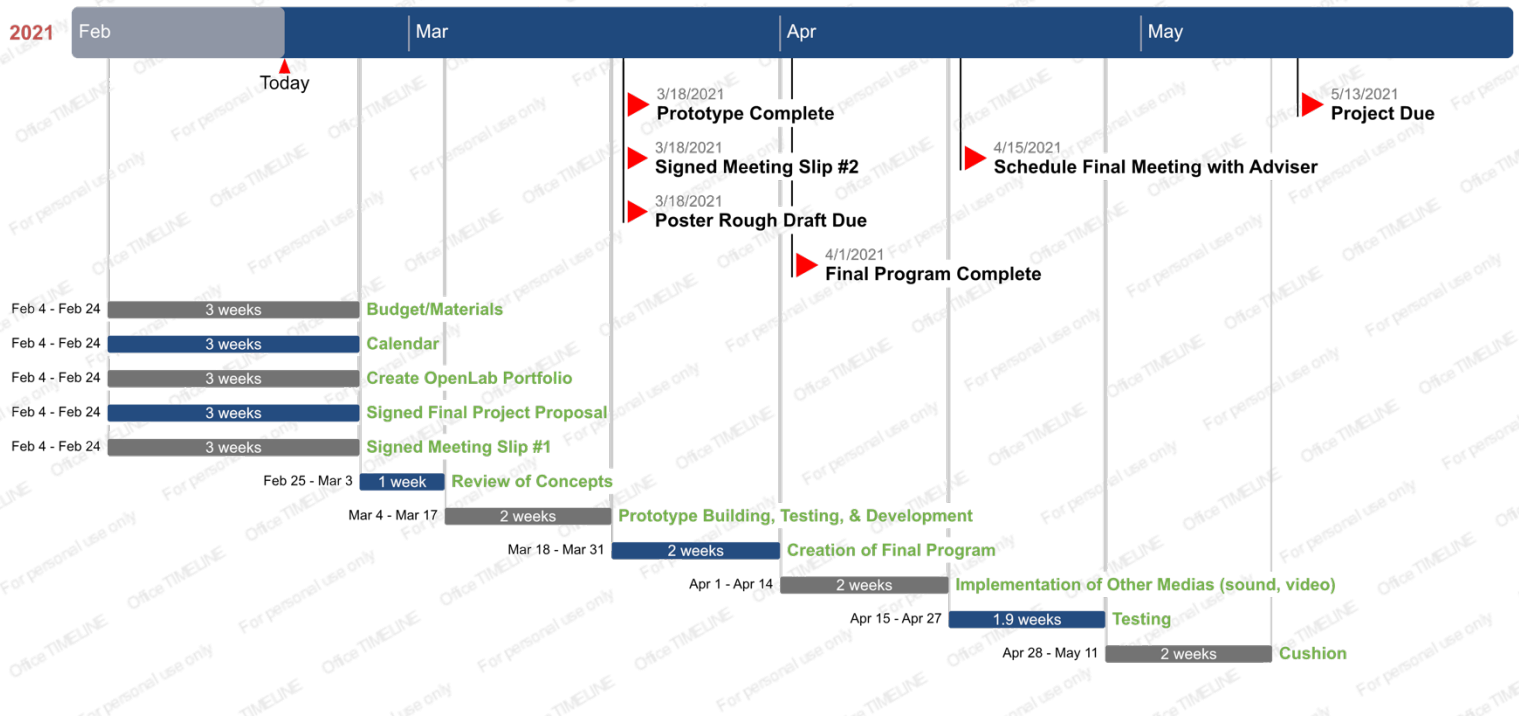- A working interactive video experience

Deliverables: If there's time

- Walk-through demo showing the project in action

Schedule

Start Date	End Date	Description	Duration (days)
02/04/2021	2/25/2021	Signed Final Project Proposal	21
02/04/2021	2/25/2021	Signed Meeting Slip #1	21
02/04/2021	2/25/2021	Create OpenLab Portfolio	21
02/04/2021	2/25/2021	Budget/Materials	21
02/04/2021	2/25/2021	Calendar	21
2/25/2021	3/3/2021	Review of Concepts	7
3/4/2021	3/17/2021	Prototype Building, Testing, & Development	14
3/18/2021	3/18/2021	Prototype Complete	1
3/18/2021	3/18/2021	Poster Rough Draft Due	1
3/18/2021	3/18/2021	Signed Meeting Slip #2	1
3/18/2021	3/31/2021	Creation of Final Program	14
4/1/2021	4/1/2021	Final Program Complete	
4/1/2021	4/14/2021	Implementation of other medias (sound, video)	14
4/15/2021	4/15/2021	Schedule Final Meeting with Adviser	1
4/15/2021	4/27/2021	Testing	13
4/28/2021	5/11/2021	Cushion	14
5/13/2021	5/13/2021	Project Due	1

Culmination Schedule

2021

	Feb / Mar / Apr / May

Today

3/18/2021 — **Prototype Complete**
3/18/2021 — **Signed Meeting Slip #2**
3/18/2021 — **Poster Rough Draft Due**
4/1/2021 — **Final Program Complete**
4/15/2021 — **Schedule Final Meeting with Adviser**
5/13/2021 — **Project Due**

Feb 4 - Feb 24 — 3 weeks — **Budget/Materials**
Feb 4 - Feb 24 — 3 weeks — **Calendar**
Feb 4 - Feb 24 — 3 weeks — **Create OpenLab Portfolio**
Feb 4 - Feb 24 — 3 weeks — **Signed Final Project Proposal**
Feb 4 - Feb 24 — 3 weeks — **Signed Meeting Slip #1**
Feb 25 - Mar 3 — 1 week — **Review of Concepts**
Mar 4 - Mar 17 — 2 weeks — **Prototype Building, Testing, & Development**
Mar 18 - Mar 31 — 2 weeks — **Creation of Final Program**
Apr 1 - Apr 14 — 2 weeks — **Implementation of Other Medias (sound, video)**
Apr 15 - Apr 27 — 1.9 weeks — **Testing**
Apr 28 - May 11 — 2 weeks — **Cushion**

Required Resources

Materials	Details	Amount
P5.js	JavaScript Library	1
iMac	Computer	1
Adobe Creative Cloud	Software	1
Projector	Hardware	1
Webcam	Hardware	1

Budget

Materials	Details	Amount	Cost
P5.js	JavaScript Library	1	$0.00
iMac	Computer	1	$0.00
Adobe Creative Cloud	Software	1	$0.00
Projector	Hardware	1	$0.00 (School)
Webcam	Hardware	1	$25.00

Proposed Table of Contents/Portfolio Outline

- Introduction
- Methods
- Project Budget – estimate vs. actual
- Project Calendar – estimate vs. actual
- Completed Paperwork
    - Materials Estimate
    - Research Notes
    - Development of Prototype (Notes & Photo Archive)
    - Troubleshooting (Notes & Photo Archive)
    - Testing (Notes & Photo Archive)
    - Pseudocode
- Conclusion
- Annotated Bibliography