
i blimp, you blimp
weBLIMP
iat320 09
body interface
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weBLIMP: An Social Crowd Collaborative Exhibition

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1 Abstract

The weBLIMP art exhibition is intended to play with participant's sense of scale. weBLIMP is a blimp, controlled by participants in a room (located away from view of the blimp). The navigators play in a room with a projector showing, at wall size, what the blimp is seeing, and the blimp embodies what the participants do. The participants react to what they see on screen, and the blimp reacts to what the participants do. This project is an example of embodied interaction, which plays with scale and social interaction.

2 Introduction

2.1 Purpose

This document outlines our Team's application to the Prix Ars Electronica during the Ars Electronica Festival. The purpose of this project is to explore the concept of crowd collaboration, and how it can occur in the context of navigational controls in an embodied manner. The project attempts to bridge the gap caused by the disembodied relationship between the remote control and the Blimp. Rather than use conventional navigation controls like joysticks that are often manipulated by a single driver, we want to allow each "passenger" to have a say in how the Blimp is navigated.

The goal: creating an innovative, participative media installation for large audiences, by combining group navigation, social experience, and significant individual interaction.

- Using bodies to control the flight path of the blimp
- Co-experience outcomes
- Creating an extended "vision sense"
- Making something fly
- Providing a sense/feeling of flight
- Creating an embodied interaction with a disembodied artifact
- Explore crowd collaborative navigation methods

2.2 Background Research

The underlining concepts that support this project is the aspect of crowd collaboration/ social interaction and co-experience; " In a collaborative learning situation, students must negotiate goals, represent problems, and understand the meaning of concepts and procedures. Collaborating requires participants to make their thoughts explicit."(van Joolingen, 2000) Co-experience is the user experience, created by the social interaction. The experience, is generated by the users, would not be the same without the presence of the medium or it's and the possibilities for experience that it provides. The action of co-experience is creative and collaborative.

Fundamental research that supports this project is the context of ludic interaction;"Ludic activities are motivated by values of curiosity, exploration, surprise, wonder and reflection rather than by externally defined tasks. These values stimulate the intrinsic motivation

to interact with a design or to say it short feed the desire to play "(Versteeg, 2008). With the sense of play in mind, the exploration of embodiment to the project's medium is mutliangular.

Jed Berk's Autonomous Lighter than Air Vehicles (ALAVs) is a precedent study for this project. Looking into the technical components such as SunSPOT CPUs, which control the bots and allow them to respond to various stimuli such as movement, sound, light and heat. As well as the social interaction between the participants and ALAVs.The floating blobs are also able to interact via "conversations" with cell phone signals, follow "food", and can bellow to one another using high frequency vibration.

The eye of Krillorg is the initial inspiration for this project; a sub character in a massively multiplayer online role-playing game (mmorpg). A class character summons a green, disembodied, floating eye; Eye of Kilrogg, a fictional spell in the role-playing game World of Warcraft transfers the Warlock soul into a floating eye. With this eye, the Warlock can explore places that would not be accessible because of the limitations of his body. The weightlessness of this eye channeling as an extension of our bodies explores the human desire of flight and exploration.

2.3 Scope

This project involves research on various systems such as radio-controlled flight, lighter than air platforms, wireless video feeds, and bridging different systems (i.e. computer to radio control).

The team has conducted research on system such as radio-controlled flight, wireless video feed, lighter than air platforms, and bridging multiple systems (Arduino - Radio Controller - Navigation system (control room)) together. We have constructed a prototype hovering platform along with its embodied control room.

However, the team has not and do not expect to conduct research on flying/exploring outdoors.

Moving forward, there will be a safety system developed so that the participants in the room will be unable to crash the blimp.

3 Discussion

3.1 Installation Plan (Approach)

3.1.1 Form of Interaction:

The interaction between the project's medium and the participants are in many folds. The interface is ambiguous, allowing the participants to collaborate and discover the controls. Without the confinements of rules and end goals, there is a greater sense of exploration and participants can use the medium create their own outcomes.

The interaction can be classified into two categories: control room and flight room.

With in the control room, participants socially interaction to navigate the blimp (which is located in the flight room) where as in the flight room, as the blimp is being controlled by the participants in the corresponding room; the blimp is flying "consciously" between the participants, creating a sense of play and curiosity.

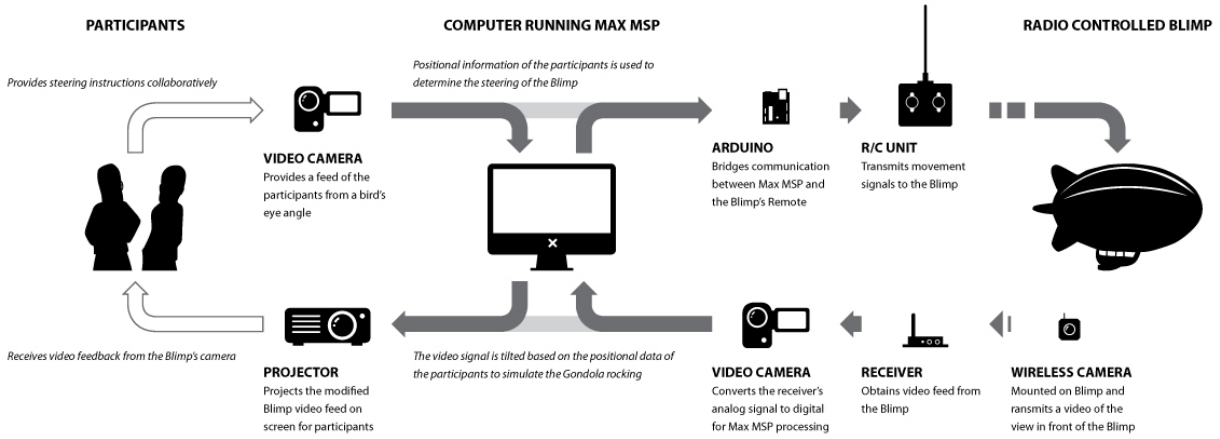

Figure 1 System Information Model

3.1.2 Role of the Participants

There are two types of participants with this installation. First are the navigators, who are in a room moving about a space, which gets translated into blimp movement in the adjacent room. The second kind of participant are those who are interacting directly with the blimp itself, helping to provide scale for the navigators. It has been our experience that the navigators create games to play with the blimp and objects in the flight room.

- The propeller on the underside of the blimp allows it to move straight up or down.
- The left propeller can turn the blimp slightly right forward or slightly left backward.
- The right propeller can turn the blimp slightly left forward or slightly right-backward
- The left and right propeller together can allow the blimp to go forward, backward, rotate-left, prototype of control room or rotate-right.

The navigation system works as follows:

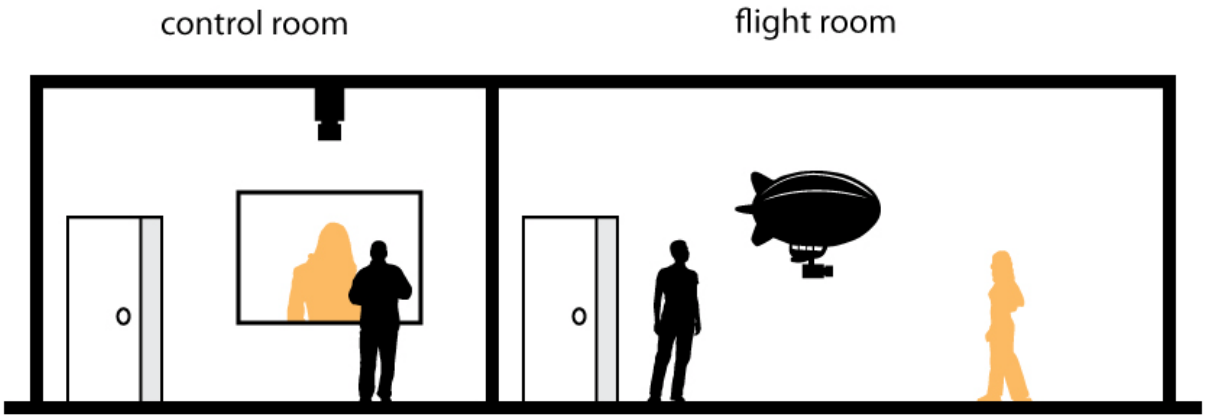

Figure 2 Room Relationship Diagram

4 Resources

4.1 Personnel

Brian Quan
Andrew Thong
Nathan Waddington
Anna Wu

4.2 Facilities and Equipment

4.2.1 Spatial Requirements:

This project needs two adjacent rooms, one that acts a control room and a second for a flight room.

4.2.2 Technical Requirements for on-site realization

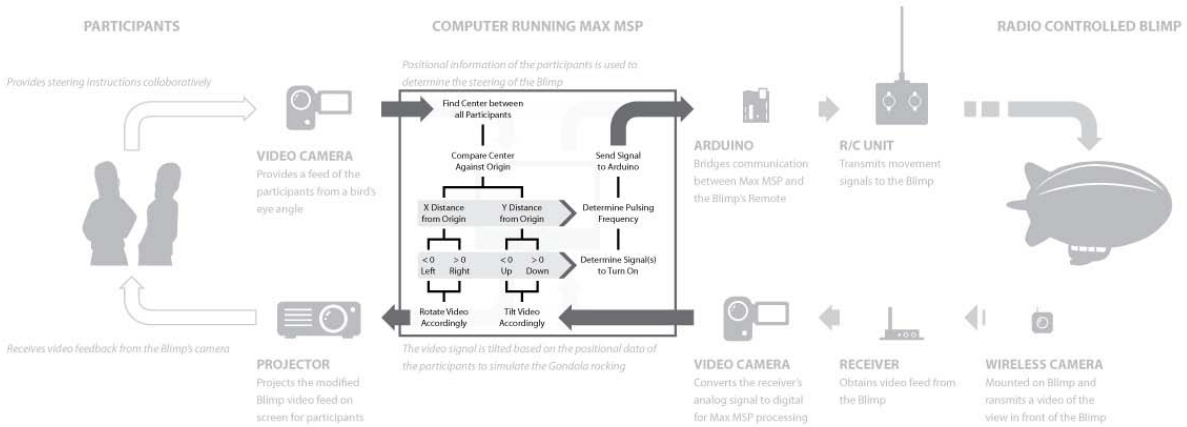

Figure 3 System Flow of Logic Diagram

4.2.2.1 Hardware

- Computer for running control system
- Camera for blob tracking
- Projector for showing what the blimp is capturing
- RC Blimp (remote control is modified)
- a/v Wireless camera
- Arduino board
- Breadboard
- Painter's tape or paint for marking out the navigator's boundaries
- One 9-volt battery
- One 3 volt battery

4.2.2.2 Software

- Max/MSP runtime
- cv.jit Library for Max/MSP
- weBLIMP system software (provided)

4.2.3 What We Can Contribute to a presentation of our work:

The team can provide the blimp and blimp-cam (including the blimp-cam receiver, which connects directly to a projector), as well as the physical control system, which connects to the system control computer.

The team can also provide the following:

- RC Blimp (remote control is modified)
- a/v Wireless camera
- Arduino board
- Bread board

- Maxdiuno
- Painter's tape
- One 9 volt battery
- One 3 volt battery

4.2.4 What would need to be provided by Ars Electronica

Control room: scaffolding for the blob-tracking camera (the camera should be directly above the participants).

Other equipment that Ars Electronics would need to provide:

- Computer for running control system
- Camera for blob tracking
- Projector and screen for showing what the blimp is capturing

5 Conclusion

5.1 Summary

WeBLIMP is an interactive installation, which puts emphasis on crowd collaboration, and the benefits of social interaction such as co experience. The medium of this project allows the interaction to be multi-angular; with dynamic components which allow each participative to contribute uniquely. With Ludic interaction as the foundation to exploration, the blimp acts as a vessel with limitless possibilities in creating user-end goals.

The process of creating this project begins with the aspect of crowd collaboration, context of ludic interaction and the precedent study of Jed Berk's ALAVs. The technical components of this project include reverse engineering on the remote control of the blimp, coding in MAX/MSP using the camera to capture the participants interacting and then converting them into blobs to track) and Ardiuno for the communication.

5.2 Contact

For more information regarding this proposal, contact the team via email at iat320-team-a@sfu.ca. We look forward to hearing from you.

5.3 Sources used / Annotated Bibliography

van Joolingen, W. R., (2000). Designing for collaborative discovery learning. retrieved from http://edu.fss.uu.nl/medewerkers/gk/files/Boxtel_dissertation.pdf on April 18, 2009

Versteeg, V., (2008). Ludic Interaction retrieved from http://ludicinteraction.wordpress.com/2008/03/12/ludic-interaction/ on April 18, 2008