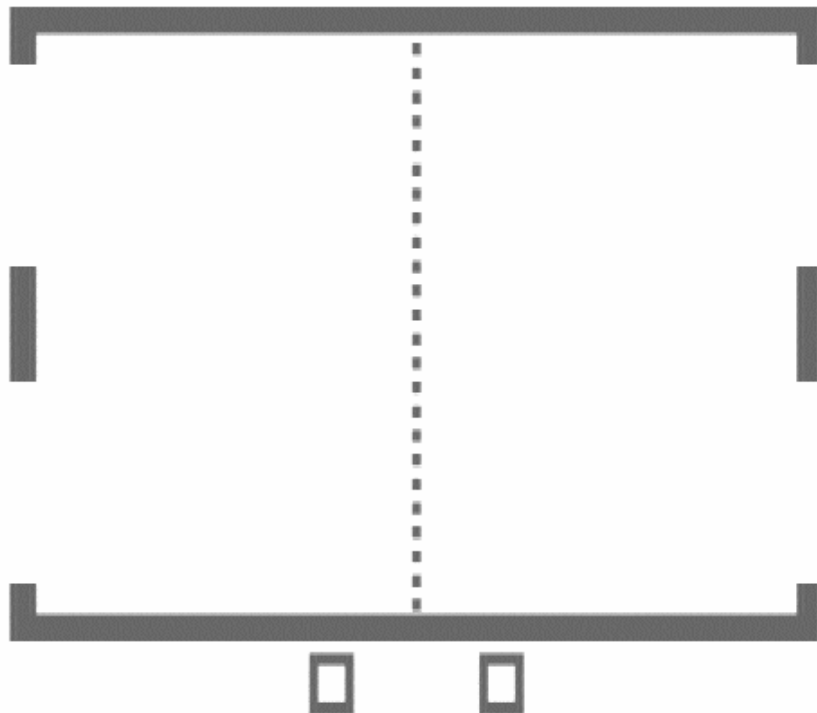


PROJECT PROPOSAL: “UBERPONG”

By

Team UBERPONG



Work done for COMP471

Submitted to: Dr. Sha Xin Wei

Concordia University

October 23, 2006

Name of Project: “UBERPONG”

Project Description Document

<http://hybrid.concordia.ca/~sasooab/cart498/>

This document introduces the members of Team UBERPONG and describes the project itself. There are 3 parts in the document (The Team, The Project, Schedules)

Part A: The Team

The team consists of three students from the Faculty of Engineering and Computer Science (ENCS) and one from the Fine Arts Department (CART).

Alain Chung (Computer Eng.) 5450373– Being in the same program as David, Alain will play an active role in similar technical tasks. He is also given the preliminary concepts for UberPong and will accept the role of project leader. Alain will also implement the mathematics and physics underlying UberPong such as collisions and free body trajectories. Alain will also help design the MSP patch, which will implement visual and audio effects.

Jae Won Chun (CART) 4435729 – Jae Won is from the art department and has a good artistic sense. She will be the team’s lead project designer. She will take care of the set construction as well. Accounting for her art project in the past, she will be able to fulfill these roles perfectly. Jae Won has worked with web programming and Flash animation. She has taken the lead role in developing the website.

David Yu (Computer Eng.) 4926390 – David is completing his last year in computer engineering and has acquired good programming skills over the years. Thus, he will help out a great deal in the programming aspect of the project. Also, he will help in the set construction and design to develop his artistic side. David will also assist in design the MSP patch.

Ludovic Briere (Computer Science) 6129447 – Ludovic is a student currently completing his last year in Computer Science as exchange student from France. Ludovic has experience in many programming languages, including C++ and OpenGL. Therefore, he will be taking a leading role in integrating OpenGL with Max/MSP/Jitter.

Part B: The Project

UberPong is an interactive game that will be played in real time, using a live feed which will be enhanced by a MSP patch. The game involves two players, who will have gloves to knock the ball back and forth to each other. When the ball gets hit past the opponent and reaches the border of the screen, the player gets a point. The score will be shown in the two corners on top of both players. A timer will also be used to show the time allowed for each round. As the game progress, the ball movement will be quicker and thus the difficulty will rise with respect to time.

The setup

The two players will stand in a place with uniformly lighted white background. The ball to be used will be created by computer and projected on the background. The ball will be either created using OpenGL or other program allowing interaction with the ball. The ball will depict real physics of motion. Thus, the ball used during game play is a virtual one and is going to be red to facilitate movement tracking. The player will be given a big pair of bright red gloves, such as boxing gloves, which will acts as a shield to reflect the ball back to the opponent. The red color is chosen also to facilitate movement tracking.

Also, a little green column will be added at the opposite end of the screen where the players will be standing. This will be the scoring net. When the red ball reaches the green column on one's side, a point is given to the opposite player. Also, the player will be wearing white so that it is consistent with the background color. The reason for doing so is that it will allow the ball to go through the player when the latter misses the ball.

Software Architecture

There are 3 main components in this project: the live feed, the MSP patcher, and the video projection. The live feed will be split into colored layers using MSP and the red color will be isolated from the rest of the feed. In order to achieve this, we will require that no additional red be used worn on clothing.

We will be implementing the ball in OpenGL in order to be able to apply the physics more easily. MSP's OpenGL integrated library will be used for this cause. The motions of the ball can be tweaked, for example, it can show characteristics of being in water, by changing the drag coefficient.

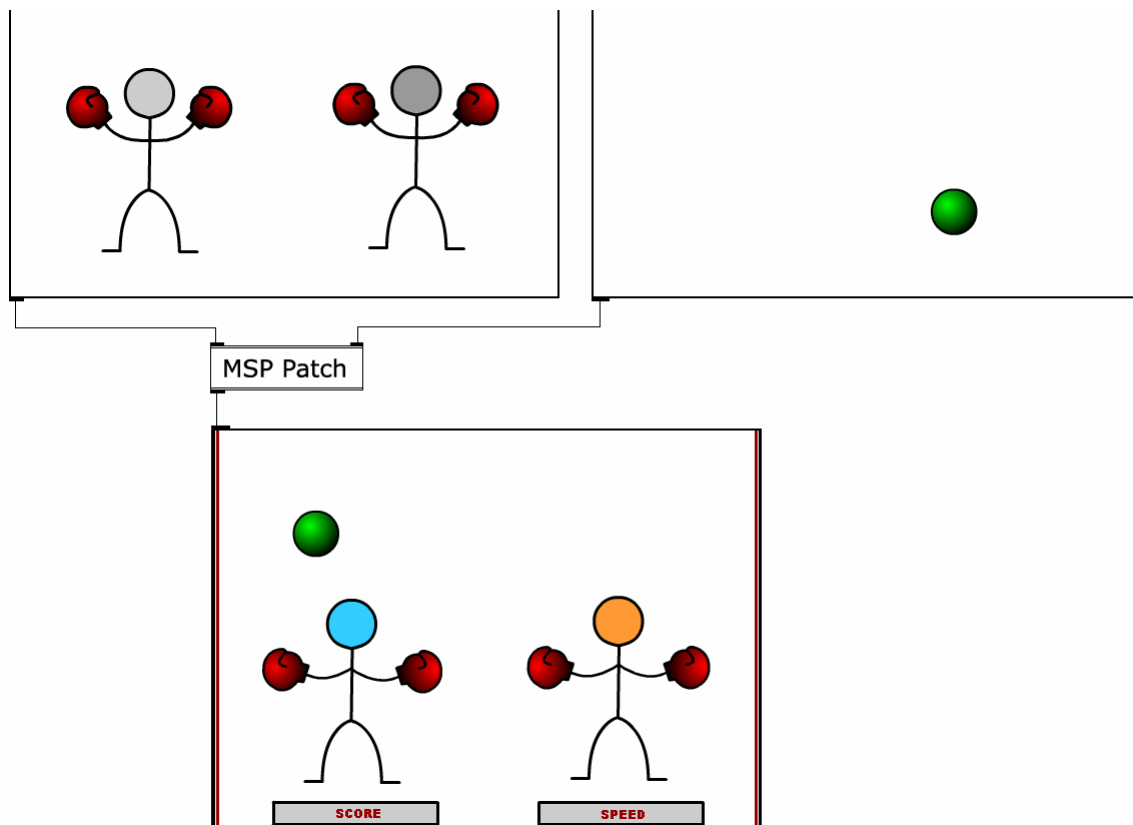
These red gloves will then be superimposed onto a video of a ball free space trajectory. The red will be tracked using a motion sensor, using the difference in location between frames (derivatives), which will keep track of the movement vectors involved. These vectors will be used to compute the collisions when the ball hits the red gloves. In other words, the red gloves will act as parameters in the trajectory of the floating ball. This will prove to be difficult, since we will have to implement mechanical physics behind our game.

Also, the velocity of the moving gloves will dictate the force of impact, which will influence the way the ball moves. When there are collisions, audio and visual effects will be added to the video projection, which will add to the whole effect of UberPong as being an interactive game. This aspect will show creativity.

Example

There is a flash video posted on the website, which illustrates the basic concept of UberPong. (<http://hybrid.concordia.ca/~sasooab/cart498/>)

Here is a screenshot of the UberPong concept:



What is the project exploring?

The theme of UberPong is to immerse its audience in an intense audio/visual experience that is both interactive and responsive.

This idea comes to us because we realized the great potential of responsive real-time video. That aspect is well captured in UberPong, since it uses a patched live feed. However, we wanted to implement something that was interactive as well, and including a two player game was the best way to accomplish this.

UberPong will keep our public interested for a longer time since they will be occupied in a competitive game. Our goal is to captivate our audience with high quality visual/audio effects while keeping them hooked on a fun and interactive game.

Part C: Schedules

This project is still in its introductory stage, therefore, the schedules have not been set yet.

Milestones and Timetable:

n/a

Deliverable:

n/a

Resources needed:

n/a

References:

n/a