

Networked Air Hockey Video Game

CSEE 4840 Project Proposal - March 2010

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Abstract

The main goal of the project is to implement an Ethernet-based interactive and addictive game (similar to air hockey game) that can be played between two players over two different terminals. The project will be implemented on Altera Cyclone II FPGA with the development of the game strategies done in a combination of both hardware (in VHDL) and software (in C).

1. Introduction

The Ethernet-based interactive video game we intend to design in this project is a two player game with two PC's connected over Ethernet and we have this game application running on the two machines. We will be mapping the position of ball, the players' positions and we have a screen somewhat similar to the original game base. The application will be a C program that will control the application layer of the design and VHDL describes the necessary hardware for it. The players will find it fun to compete against one another and will play with the help of keyboard controls.

2. Design of the game

We plan to implement the following interfaces and features for the game:

- A GUI development for game initiation and play mode
- Variation in the speed of the ball after being hit by the player
- Score keeping of the current game progress

and finish the game when one of the players reaches a certain score

- Implementation of design controls for respective players using the PS2 keyboard as that would be easier to control for the players
- Create an Ethernet network between two PC's and have a real two player game

3. Milestones

Milestone 1: Setting Basic Two players

Implement the project with two players on the same computer without any networking and start implementation of controls with the help of PS2 keyboard.

Milestone 2: Implementing the Features

Using all the boundary conditions write appropriate C application code and integrate it with the hardware. Get the basic game to work with a scroll whose position will be changed by the arrow keys and deflect the ball if it hits the scroll on the screen. Depending upon the angle and position at which the ball hits the scroll, the deflection speed and angle of the ball will be determined. Display the person's name and scores on the screen as the game progresses. Implement the score keeping and the game strategies and rules. Change the GUI settings to get a more real life look of the game.

Milestone 3: Networking the two terminals

Implement the game strategy on two computers and introduce Ethernet-based environment and interfacing for proper co-ordination on both the terminals.

4. Future Goals

Upon developing the game with Ethernet control within time, we then look forward to carry our future goals that include:

- Adding audio effects
- Improving the Graphics of the game