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CS464

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Project Proposal: Beat Boxing

Updated due to COVID-19

We have decided that our project will be a virtual reality boxing game that promotes exercise for the user. Boxing is a universal sport that is a healthy way to stay active. However, it can be a dangerous sport in regards to physical contact. This VR project will enable the common individual to enjoy all aspects of the sport in the comfort of their own home. We wish to include the action of shooting beams out of your fists in order to eliminate long distance targets. This will introduce a unique layer of game play that will elevate the users experience.

We will be using an Oculus Quest as our virtual reality hardware. We plan to build the project with Unity or Unreal Engine. We will attempt to do this using two macbook pros and a windows computer. We would like to use unity through SteamVR. However, this poses a challenge because we would need a powerful windows computer/eGPU and a link cord for the oculus quest.

Our primary motivation for this project is to promote health and exercise. Our secondary motivation is to learn how to interact and program using a VR interface. If we

are able to create a unique enough game, we would like to submit the game to the oculus quest store to make it available to anyone who would want to play.

The project will have blocks coming at the player as well as obstacles for the player to dodge. The player will be required to do a number of movement combinations such as punches, squats, and physically moving their body. We also want to include the ability to shoot beams out of your fists in order to eliminate game objects that are meant to be targeted from a distance. I believe that this will keep game play a bit more interesting for the user.

Our experiment will be within-subjects and utilize a questionnaire design. There will be three tasks: slow, medium, and fast cube speed. These will be our independent variables. We will use counterbalance and latin square for administering the tasks to participants. Prior to the experiment will record the user's age, prior experience with virtual reality, prior experience with boxing, number of times they workout per week, and questions about mood. During the experiment we will measure accuracy for hitting each block. This will be one of our dependent variables. Our other dependent variables will come from our questionnaire. We will ask about the user's mood, soreness, how sweaty they are, and if they feel like they got a good workout.

Update for COVID-19. We plan to continue with our experiment, however, we will be asking participants to have an Oculus Quest and to download our game to run it. Professor Ortega has mentioned that several students in the class have Oculus Quest systemes. We will send them a questionnaire to fill out after they finish playing our

Boxing Exercise VR game. We will also ask them to record their screen when they play their game so that we can review it and take measurements.

References

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