

Virtual Racing (Proposal)

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we are going to build a virtual racing game, where player(s) can control a car/motor-cycle racing in the virtual environment.

Motivation:

Virtual reality has been presented as a popular medium, through which people can experience a virtual environment that feels realistic. Bill Gates, for example, has invested a lot in the VR industry, primarily because he believes VR can make people better understand the lives of others in the poor regions through the immersive experience of being in the regions themselves. In this project, we try to build a virtual 3D interactive game, where players can control fancy cars / motorcycles racing with no speed limit. Players simply put on their head-mounted devices, and then they can enjoy an exciting car racing happening in fascinating places. This is cool because people can use it to destress anytime anywhere.

Summary of previous work:

As one of the first game genres to embrace VR, simulated racing has been successfully transitioning from the ‘very early adopter’ stage to the ‘early adopter’ stage [1]. From mid-2014 until early 2016, when the Rift DK2 development was essentially the only hardware option, software support in racing simulators was very immature. Since then, the situation has improved, but each software solution featured is still considered a work-in-progress by online user experience reports. Now almost every PC racing simulator (in active development) has some form of VR support for the HTC Vive and Oculus Rift, including RaceRoom Racing Experience, Project CARS, Assetto Corsa and iRacing. In these games, players can choose edition of games, car styles, and can access leaderboard.

Besides these efforts to make already existing simulated racings incorporate VR vision, people also tried adding force feedback steering wheel to make steering control more realistic [2]. In this way, players can feel it when they hit a wall or bumps on the road.

What’s new:

We will build two game modes, including 1) normal mode: where players race normally. 2) bumper mode: where players play in a field with obstacles and try to hit/knock other players to gain score.

Notice that the second game mode might be boring if playing without VR environment, but could be of lots of fun with VR headsets.

Platform:

Develop with Unity 3D, deploy with WebGL, and run in browser on VRduino

Game components:

start menu: user select/config the games

racing maps: where the race occurs

cars/motor-cycles: vehicles for the race

leader board: records top racing results

multiplayer support: several players compete on LAN

Interaction:

Using IMU with VRduino, and directional data for controlling, including left, right, speed up, and brake.

Timeline:

Week 1: learn Unity 3D, build racing maps and car models

Week 2: merge control/interaction into the game, develop the user menu

Week 3: develop multi-player supports and make poster

References:

[1] <http://www.roadtovr.com/top-5-racing-sims-with-oculus-rift-support-virtual-reality/>

[2] <https://www.youtube.com/watch?v=zVVPyr86F2E>