

Winter Semester 2017/18

Assignment on Virtual Reality and Physically-Based Simulation - Sheet 1

Due Date October 29. 2017

Exercise 1 (Virtual Reality, 5 Credits)

- Define the following concepts in your own words. Use no more than 2 sentences per concept: *Virtual Reality*, *Virtual Environment*, *Immersion*, *Presence*, *Fidelity* and *Suspension of Disbelief*.
- Imagine the following scenario: You are standing on a glass floor, from beneath that glass floor a virtual skyscraper is being projected, so that you can see your own body standing on the virtual building. Is that AR or VR? Provide some arguments for your position.
- Give three possible applications of VR. Can you find some examples where VR is not being applied, but could be?

Exercise 2 (Lab demos, 4 Credits)

We want to compare the different VR-demos you saw in the lab today. Answer the Igroup Presence Questionnaire (IPQ) in table 1 for each of the four demos you tried. The IPQ is a scale for measuring the sense of presence experienced in a virtual environment.¹

In two weeks I will present to you the results in the class. Please use a plain text file (no Word, Excel...). The results need to conform the following CSV format:

GroupMember	Demo	G1	SP1	SP2	SP3	SP4	SP5	INV1	INV2	INV3	INV4	REAL1	REAL2	REAL3	REAL4
1	.Coral	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1	.Assembly	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1	.Haptic	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1	.DualHaptic	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.Coral	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.Assembly	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.Haptic	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2	.DualHaptic	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
...															

The file should contain 4 lines per group member plus the header. Ratings range from -3 to +3 and are based on the *English anchors*.

¹ www.igroup.org/pq/ipq/

Table 1: Igroup Presence Questionnaire

IPQ name	English question	English anchors
G1	In the computer generated world I had a sense of "being there"	not at all-very much
SP1	Somehow I felt that the virtual world surrounded me.	fully disagree-fully agree
SP2	I felt like I was just perceiving pictures.	fully disagree-fully agree
SP3	I did not feel present in the virtual space.	did not feel-felt present
SP4	I had a sense of acting in the virtual space, rather than operating something from outside.	fully disagree-fully agree
SP5	I felt present in the virtual space.	fully disagree-fully agree
INV1	How aware were you of the real world surrounding while navigating in the virtual world? (i.e. sounds, room temperature, other people, etc.)?	extremely aware-not aware at all
INV2	I was not aware of my real environment.	fully disagree-fully agree
INV3	I still paid attention to the real environment.	fully disagree-fully agree
INV4	I was completely captivated by the virtual world.	fully disagree-fully agree
REAL1	How real did the virtual world seem to you?	completely real-not real at all
REAL2	How much did your experience in the virtual environment seem consistent with your real world experience ?	not consistent-very consistent
REAL3	How real did the virtual world seem to you?	about as real as an imagined world-indistinguishable from the real world
REAL4	The virtual world seemed more realistic than the real world.	fully disagree-fully agree

Exercise 3 (Unreal Engine, 0 Credits)

- a) Register an account and download the Unreal Engine 4 at <https://www.unrealengine.com>.
- b) Make sure you have at least 15GB of free space on your hard drive. Install the launcher and let it download the engine version 4.17. You can see the progress in the *Library* tab of the launcher.
- c) Download and install *Visual Studio Enterprise 2017* at <http://www.uni-bremen.de/zfn/software/dreamspark-premium.html>. I recommend the English version as errors in English are far more easy to google.