

Assessment Guidelines for Design of Virtual Environments

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Assessment of ITM31519-1 21V Design av virtuelle miljøer is done based on a portfolio exam that consists of three deliveries: Planning, Designing, and Prototyping. The assignments document the development of a virtual reality or augmented reality group project. They are delivered as web pages, one per assignment, writing but also linking to relevant files on Canvas. The Unity project is also delivered and inspected for plagiarism. The students get a group grade based on the assignments. Here is a description of each assignment:

Planning

The main goal of this assignment is to plan the project work. The students are asked to create:

- Definition of Topic, Goals, Target group, Application Domain
- Definition of Team, Tasks and, Who is doing what
- Informing: Interview at least 5 people present you idea, discuss about it, ask questions, and summarise, obtain requirements
- Rough sketch of the main idea
- Rough specification of necessary resources: number of models, amount of interactivity, sonic and other requirements, model fidelity, accessibility to existing models, needs for self-modelling, scanning assets
- List of Software and Hardware Requirements for completing the project
- things that are available and things that are missing
- Timetable with Milestones

Design

The main goal of this assignment is to plan the project work. The students are asked to:

- Make a storyboard focusing on the real user perspective: This is a classical storyboard showing what happens before, during, and after interaction, showing the physical context (where the user is, are they sitting, standing, or walking?, are there other people or objects around?)
- Make a series of annotated sketches which illustrate the narrative in your VR project from the virtual user perspective, show the use case: which assets are around, how the user can interact with them, what can the user achieve with interaction and so on.

- Inventory of design elements (Assets, Interactions, Feedback, World) and platform (mobile, headset, ...)
- Describe and justify the design choices in the VR/AR environment (use of virtual or augmented reality, use of sensors, affordances, constraints etc)
- Video Documentation of a primitive prototype with integrated features (e.g. assets, Interaction, audio)
- Unity project with integrated features, following the instructions below:
 - save the scene and close Unity
 - copy every subfolder within the project folder except the Library folder
 - zip and upload the file

Prototyping

To complete this assignment, the student needs to prepare:

- Unity Project of the Interactive prototype
- Citation list of assets obtained from the Internet
- Video documentation of the project and the prototype: a video that documents the whole project i.e. how you have started, how it has developed, and the final outcome and evaluation. You can include drawings, screenshots of Unity, and views of the actual experience (through a screen recording for example)
- Evaluation of the prototype with at least 5 participants, summary, and changes that may be necessary
- A final presentation (15 minutes) for the Presentations session
 - Presentation of the project
 - Presentation of the process
 - Each student presents her/his own work

Update on the performance of evaluation: Given the Corona situation the following protocol is suggested for the evaluation. The evaluation participant will interact with the virtual environment while "thinking aloud" her or his actions and experiences (e.g. what they are trying to do, what they find easy or hard, what s/he likes and what s/he doesn't like) and the other team members will take notes. It is also possible to ask questions during or after the evaluation. You can ask participants to perform one or more task if think you think this is relevant. You can also leave participants free to interact they way they want especially if you are targeting a more open-ended application. Please make an argument for your choices. We still recommend to involve external participants, if possible, for example, your roommates, family members etc. If you are unable to find external participants you can do the evaluation using the project team. Split the team in two and use two-three persons as test persons and one-two persons as evaluators. For projects using VR headsets, it would be good if at least one test person uses a VR headset in the evaluation. The rest of the test persons can use a computer screen if you do not have enough headsets. It is also possible that evaluation is done through Zoom or similar. In this case make sure the 3D graphics and sound are streamed to the evaluators while think-aloud is being performed.

Grading

The final grade is based on the following criteria :

Table 1: Criteria used for final marking of the project

Criterion	Points
Interaction Quality	20
Graphics and Audio Quality	30
Design Process and Rationale	30
Presentation	20
	1000

Here is a short description of the criteria:

Interaction Quality Choices about Interaction, Unity Implementation and Scripting

Graphics and Audio Quality Quality and Appropriateness of Graphics and Audio assets used

Design Process and Rationale Quality of choices with respect to the conception of the application, its design and its justification. Appropriateness of use of affordances and constraints and feedback.

Presentation Quality of final presentation, quality of presentation of the assignments.

Grades

Grades are awarded according to a grade scale from A (highest) to F (lowest), with E as the minimum pass grade. A pass/fail mark is given for some examinations. Depending on the number of correct answers and the degree of independent thinking the following grades are given.

- A - Excellent** An excellent performance, clearly outstanding. 90%-100% of criteria are fulfilled and the candidates demonstrate excellent judgement and a high degree of independent thinking.
- B - Very good** A very good performance. 80%-89% of criteria are fulfilled and the candidates demonstrate sound judgement and a very good degree of independent thinking.
- C - Good** A good performance in most areas. 70%-79% of questions are answered and the candidates demonstrate a reasonable degree of judgement and independent thinking in the most important areas.
- D - Satisfactory** A satisfactory performance, but with significant shortcomings. 60%-69% of criteria are fulfilled but the candidates demonstrates a limited degree of judgement and independent thinking.
- E - Sufficient** A performance that meets the minimum criteria, but not more. 50%-59% of criteria are fulfilled, however, the candidates demonstrates a very limited degree of judgement and independent thinking.
- F - Fail** A performance that does not meet the minimum academic criteria. Less than 50% of the criteria are fulfilled and the candidates demonstrates an absence of both judgement and independent thinking.