Department of Computer Science

CS32310: Advanced Computer Graphics

Assignment 2016–2017 — **Scene Modelling and Navigation**

Release Date: 1st November 2016

Submission Date: 7th December 2016 (4pm)

Feedback Date: 6th January 2017

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1 Assignment

Your assignment is to model the rooms of a house using WebGL and *three.js* (other languages may be allowed, please discuss with hem23 in advance). Use the techniques you have learned during the lectures, practical sessions, or anywhere appropriate to build several rooms that can be navigated by the user. You may wish to use your own house as inspiration.

The basic scene should include several rooms that can be navigated by the user. More advanced scenes will include additional creative effects, for example, particle systems, advanced lighting, and textures.

Your source code should be submitted along with a report detailing the work and discussing techniques used in your scene.

1.1 Source Code

The source code should be your own, if not, appropriate references should be added. Your code should contain comments wherever possible to describe what your code is doing; it may also be useful to annotate sections to which you wish to refer in your report.

Instructions on how to run your code should be provided in your report.

1.2 Report

Your report should be 4-8 pages long, including some screenshots. In the report you should describe the contents of your scene and how you achieved them. Discuss the techniques you used, any problems which arose and how you solved them.

Your report should be submitted as a PDF file, formatted using the Springer LNCS conference proceedings style. Templates and guidelines for the format are available on the module Blackboard page, and at the following URL:
`http://www.springer.com/gp/computer-science/lncs/conference-proceedings-guidelines`

2 Hand-in dates

You must submit your source code and report – packaged in a zip file (.zip format) – via Blackboard by **16:00 (4pm) on Wednesday 7th December 2016**.

3 Assessment Criteria and Marking Specification

This assignment is worth 100% of the marks for the module CS32310. The Assessment Criteria for Development in Appendix AA of the student handbook[1] and the following marking specification will be used to assess your submission for this assignment.

The main criteria of the marking specification are divided into two main sections, each with their own subsections. Each subsection will be given an individual mark, which will contribute towards an overall mark. The marks given overall and for subsections will correspond to the following grades:

Mark	Result
<= 30%	**Failed** No proper scene can be seen and/or no report was submitted; the task has not been completed to the assignment specification.
30–39%	**Insufficient** A basic scene has been produced, but it is too simple. There may be some basic geometry, but no proper lighting, texture, animation or interaction in the scene. A report was not submitted, or does not contain enough detail to explain your scene.
40–49%	**Pass** A proper scene has been produced with somewhat realistic appearance. Some basic lighting, texture, or animations have been used, but there is little to no interaction available to the user. Report contains some basic descriptions of the work undertaken, but does not sufficiently discuss the techniques used.
50–59%	**Good** A proper scene has been produced with good realistic appearance, with rooms containing interesting items. The scene will include use of good lighting, texture, animation, and/or interaction, but may not incorporate all elements fully. Report describes the work submitted, and includes some basic discussion about the techniques used.
60–69%	**Very Good** A proper scene has been produced with very realistic appearance, with rooms containing interesting and geometrically complex items. The scene includes very good use of advanced lighting, texture, animation, and interaction. The report carefully describes the scene, discusses the techniques used in detail, and contains some reflection on the work submitted.
>= 70%	**Excellent** An outstanding scene has been produced with very realistic appearance, with rooms containing interesting and geometrically complex items. The scene includes excellent use of advanced lighting, texture, animation, and interactions. The report carefully describes the scene, discusses the techniques used in detail, and contains reflection on the work submitted. An exceptional submission that demonstrates creativity and understanding of advanced computer graphics techniques.

[1] Assessment Criteria for Development: `http://impacs-inter.dcs.aber.ac.uk/images/editor-content/Documentation/Handbooks/Appendices/AppendixAA.pdf`

3.1 Marking Specification

The following table contains a detailed breakdown of how submissions will be marked:

Criteria	Information	Weighting
1. Quality of scene 50% overall, broken down into subsections:	Demonstrate what you have learned during the module to produce a scene appropriate to the specification. We will be looking at different aspects of your scene: room/scene modelling, lighting, texture, interaction, and animation.	**50%**
1.1. Complexity	Have you used a wide range of simple and complicated techniques to model your environment? This subsection will particularly focus on your use of modelling, lighting, and textures.	20%
1.2. Functionality	Does your scene work as expected? Does it allow the user to interact with the environment? This subsection will particularly focus on your scene's interaction – the ability to load, save, dynamically change the scene, etc.	20%
1.3. Creativity	Does your scene make a visual impact in terms of appearance? Does it allow the user to interact in interesting ways? We will be looking to see how you have used complex geometry, high-quality textures, animations, and interactions to produce a visually impressive and interesting interactive scene.	10%
2. Quality of report 50% overall, broken down into subsections:	Present a clear and concise report giving details on what your scene contains and how it was implemented.	**50%**
2.1. Description	Describe clearly what your scene contains in the context of computer graphics. Explain the techniques you used to implement your scene, and reference appropriate materials.	15%
2.2. Discussion	Discuss the techniques you have used in your scene and evaluate the result. Reflect on the scene you have created: what is good/bad about it? How could you improve it in the future? Which techniques caused problems, and how did you resolve them?	30%
2.3. Presentation of report	Document presented as in assignment specification: appropriate length (4-8 pages), cover sheet, references presented clearly. Paragraph layout facilitates reading.	5%