Advanced Computer Graphics
2021-22 Summative Coursework – Walking Down the Street

This coursework requires you to implement a virtual 3D city environment, titled "Walking down the street", which allows a user to navigate within the city with a good visual quality perceived. You are expected to apply multi-resolution modeling, parametric curves and surfaces and skeletal animation to construct both the scene and the objects constituting the 3D city. Your implementation should be capable of optimizing computation time while maintaining good rendering quality. You are required to decide how many objects and their representations constituting the 3D city, so that you can demonstrate how well your implementation can meet the marking criteria. To demonstrate you have an excellent or outstanding mastery of advanced computer graphics (ACG) techniques, you can further apply multiple ACG techniques in modeling the same type of objects (or object motions) or apply the same ACG technique in modeling different types of objects (or object motions).

You should submit a report explaining how your implementation meets marking criteria 2 to 6. The explanation against each marking criteria is limited to 50 words. For implementation, you are required to use three.js (https://threejs.org/). The coursework contributes 50% of the module assessment. Submission date is 27th January 2022 (2pm). The marking criteria are as follows:

1. Report and 1-minute video (10%)
2. Virtual environment construction (15%)
3. Application of multi-resolution modeling (20%)
4. Application of parametric curves and surfaces (20%)
5. Application of skeletal animation (20%)
6. Visual quality control (15%)

The levels of achievement of each marking criteria are determined as follows. This is developed based on the marking and classification conventions published in pp.15-16 of the university core regulations. (https://www.dur.ac.uk/resources/university.calendar/volumeii/2021.2022/coreregsug.pdf)

Levels of achievement of each marking criteria:	**Range of Marks**
No submission or clearly not your own contribution	0%
Inadequate, incomplete submission	0 - 40%
Satisfactory to Good (in terms of correctness and demonstrating an extensive usage of graphics library features without significant original contributions)	40 - 60%
Very Good to Excellent (in terms of original contributions, completeness, and showing a variety application of ACG techniques in object and scene modeling)	60 – 80%
Outstanding to Perfect (in terms of original contributions, completeness, showing a complicated application of ACG techniques in object and scene modeling)	80 - 100%

Your submission should include a report (pdf file), your implementation with all source codes and resource files, a readme file showing instructions of how to run your program and what external resources you have adopted, and a 1-minute video showcasing reputable features of your game. You should compress all files into a single zip file and upload it to Blackboard Ultra for submission.

***Note:** Your work must be done by yourself and comply with the university rules about plagiarism and collusion. (https://www.dur.ac.uk/learningandteaching.handbook/6/2/4/)