



Assignment in Computer Graphics II

Assignment 6 –
Computer Graphics and
Multimedia Systems Group
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Assignment 1 [3 Points] Data structures for polygon meshes

Given the following data structure for polygon mesh representation:

- All vertices are stored in a list with arbitrary order. Every vertex can be accessed by an unique ID.
- All faces are stored in a list with arbitrary order. For every face there is a list with vertex IDs. This list is ordered counter-clockwise.

You can assume that the polygon mesh is 2 manifold and that there are no holes i.e. every edge has two adjacent faces.

- 1. Develop pseudocode that realizes the above described data structure by a Winged-Edge structure.
- 2. Develop pseudocode that realizes the above described data structure by a Half-Edge structure.
- 3. What are the corresponding runtimes?

Assignment 2 [2 Points] Work on data structures for polygon meshes

Develop pseudocode (using the reference labels vert1, ...) for Winged-Edge and Half-Edge data structures for the following tasks:

- 1. Given a polygon, all edges of this polygon have to be determined.
- 2. Given a vertex, all edges incident to this vertex have to be determined.

Annotation: For the data structure Half-Edge either the 'Outgoing'- or the 'Incoming'-edges have to be determined. It is not necessary to determine both edge types.

Hand in: 30.11.2015, at beginning of the lecture or until 12:00 in the mailbox of the chair (next to room H-A 7107)