Advanced Computer Graphics
Wednesday 18th November, 2020

Assignment 1 (Subdivision curves)

In this lab session we will take a look at subdivision curves. Download the skeleton code from Nestor (*Lab Sessions*), unzip/extract the files and open `SubdivCurves.pro` in QtCreator.

Main assignment

Implement a general curve subdivision algorithm that can accept any binary subdivision mask (which can be de-composed into two stencils).

In addition, implement a way to visualise the (discrete) curvature of the resulting subdivision curve. This can be done in various ways, e.g., using colours, normal/curvature combs, or (centres of) osculating circles. A geometry shader should be used for this part of the assignment. The graphical user interface should be extended such that the user can enable/disable the visualisation of the curvature information.

Additional feature

Visualise the influence of a selected control point (i.e. when it is moved, what part of the curve is affected). Clearly indicate the boundaries of the region that is influenced.

Bonus

Implement multiple ways to visualise the curvature, and add widgets to the GUI that can be used to enable/disable each one individually.

Deadline

See Nestor (*Time Schedule*). Details on how to submit your work can also be found on Nestor (*Lab Sessions*).

Assessment

See Nestor (*Assessment* → `CodeForm.pdf`).