



Assignment in Computer Graphics II

Assignment 1 –
Computer Graphics and
Multimedia Systems Group
David Bulczak, Christoph Schikora

Assignment 1 [1 Point] Interpolation with squared polynomials

Given polynomials:

$$f_0(u) = 2u^2 - 3u + 1$$
, $f_{\frac{1}{2}}(u) = -4u^2 + 4u$, $f_1(u) = 2u^2 - u$

and the definiton of a curve:

$$\mathbf{P}(u) = f_0(u)\mathbf{P}_0 + f_{\frac{1}{2}}(u)\mathbf{P}_{\frac{1}{2}} + f_1(u)\mathbf{P}_1$$

Show that P(u) has following interpolation properties:

$$\mathbf{P}(0) = \mathbf{P}_0, \quad \mathbf{P}(\frac{1}{2}) = \mathbf{P}_{\frac{1}{2}}, \quad \mathbf{P}(1) = \mathbf{P}_1$$

Assignment 2 [1 Point] barycentric coordinates

Given is a triangle with the edges A = (3,0,0), B = (0,3,0) and C = (0,0,3).



Calculate for both rays the intersection with the triangular plane using barycentric coordinates.

- What are the parameters of the coefficients α and the barycentric coordinates (*s*₁, *s*₂) of the intersections?
- Are the intersections within the triangle (A, B, C)? (Reason necessary)

Submission: 16.10.2014, at the beginning of the exercise.