Assignment in Computer Graphics II

– Assignment 5 –

Computer Graphics and
Multimedia Systems Group
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Assignment 1 [2 Points] Catmull-Rom Approach

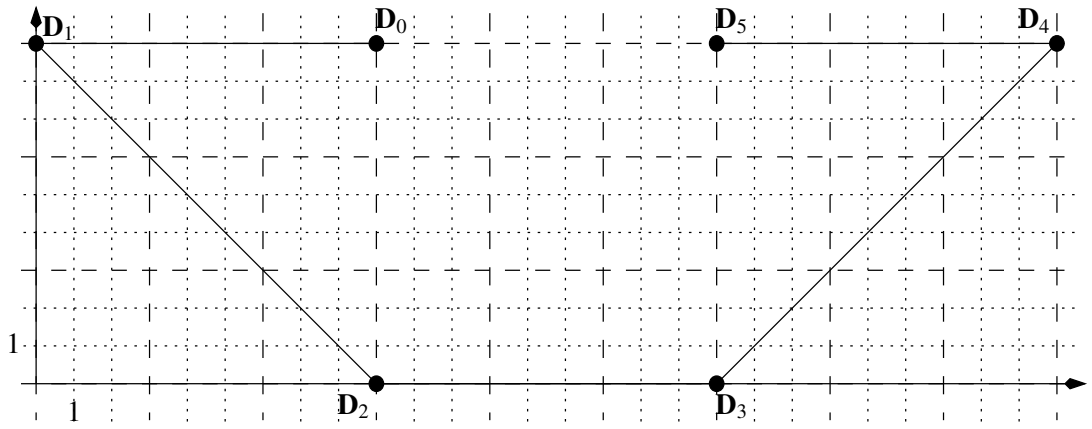
Calculate according to the Catmull-Rom approach, all control points for a cubic Bezier spline through the points $\mathbf{P}_0, \mathbf{P}_1, \mathbf{P}_2$ whose tangents are constructed by the simple end tangent estimation. Additionally calculate the alternative tangents (with fitted parabola).

$$\mathbf{P}_0 = \begin{pmatrix} 2 \\ 0 \end{pmatrix} \quad , \quad \mathbf{P}_1 = \begin{pmatrix} 10 \\ 2 \end{pmatrix} \quad , \quad \mathbf{P}_2 = \begin{pmatrix} 20 \\ 6 \end{pmatrix} \quad .$$

Assignment 2 [2 Points] De Boor algorithm (uniform knot vector)

Given the following plotted de Boor points of a uniform, cubic B-Spline curve and the parameter $u = 4\frac{1}{3}$.

1. Which de Boor points are necessary for the evaluation of the curve at u.
2. Evaluate the curve geometrically and by calculation at u.



Total points after sheet 5: 23 of 70.

Hand in: Until 17.05.2018 12:00 o'clock in mailbox of our chair (next to room 7115).