

Exercise Computer graphics – (till November 16, 2006)

Bicubic/Bilinear surfaces

Exercise 17: We have seen how bi-cubic patches were defined in the lecture. Now, exercise the same proceeding with lines only (or polynomials of first degree).

- Define the line through P_0 and P_3 (depending on parameter t) in the matrix notation used in the lecture. What is used as geometry vector and how are the coefficients derived from the geometry vector?
- Now P_0 and P_1 are functions of the parameter s . $P_0(s)$ is defined as the line through P_0 and P_1 , $P_3(s)$ is defined as line through P_3 and P_2 . Write the patch in matrix form depending on the parameters t and s .
- Multiply the matrix representation obtained above in order to yield a single term $Q(t,s)=...$
Simply $Q(t,s)$ such that each P_i occurs only once. The result is a weighted sum of the knots P_i . Verify that your calculation is correct by inserting $s=0, t=0; s=0, t=1; s=1, t=0$ and $s=1, t=1$.

