

Programming #6 (4190.410)

Due: December 5, 2012

A bicubic Bézier surface $S(u, v) = \sum_{k=0}^3 \sum_{l=0}^3 \mathbf{b}_{kl} B_k^3(u) B_l^3(v)$, $0 \leq u, v \leq 1$, can be approximated by a dense triangular mesh sampled at the uniform parameters: $u_i = i/511$, $v_j = j/511$, for $i, j = 0, \dots, 511$. Using the height map and the texture map provided, apply a displacement and texture mapping to the Bézier surface $S(u, v)$. Since the exact normal surface to the surface $S(u, v)$ has a relatively high degree 5×5 , we may define an arbitrary normal map as a bicubic surface $N(u, v) = \sum_{k=0}^3 \sum_{l=0}^3 \mathbf{n}_{kl} B_k^3(u) B_l^3(v)$, $0 \leq u, v \leq 1$.