Programming #1: Part I (4190.504)

Due: March 31, 2014

A cubic Bézier curve $C(t) = \sum_{l=0}^{3} \mathbf{b}_l B_l^3(t) = \sum_{l=0}^{3} (x_l, y_l) B_l^3(t) = (x(t), y(t))$, $0 \leq t \leq 1$, can be bounded by a hierarchy of unions of AABBs or OBBs, each bounding the curve segment $C_i^h(t) = C(t)$, $((i-1)/2^h \leq t \leq i/2^h)$, for $i = 1, \cdots, 2^h$.

Part I: Design an interactive system that can show the BVH structure (i.e., the AABB tree and the OBB tree) for the Bézier curve $C(t)$, $(0 \leq t \leq 1)$.