

Simulation and Visualization of Leaf Growth*

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Abstract: The modeling of plant organs remains an interesting problem. This paper proposes an algorithm for simulating the leaf growth. The simulating algorithm based on the theoretical studies of morphogenesis of leaf, these included the transportation of water and leaf vein pattern. We used Poiseuill's law to measure the velocity of flow in xylem part of leaf vein. The leaf vein is formed by skeletonization method. The input of the skeleton's algorithm is a 2D scanned leaf. The generating leaf shape is constructed by spline functions which interconnected into the branching structure computed by skeleton method. We applied the Poiseuill's law to the leaf vein in order to simulate the leaf growing. Depending on the specification of leaf, the algorithm can simulate various types of leaf venation patterns and leaf shapes.

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