CS151 Parameterized Stochastic L-Systems
Notes

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The goal of these notes is to help you understand the stochastic L-systems that are supplied as part of Lab 10.

Symbols in drawString

To make sysTree2.txt and sysTree3.txt work, we need the following symbols supported by Interpreter .drawString.

• F and f must both mean “forward by the (modified) distance”
• L must draw a leaf whose size can be scaled by a modifier.
• ! must handle the width. If there is no modifier, then it should decrease the width by 1 (being careful not to reduce it below 1). If there is a modifier, then it should set the width to the value of the modifier.

To draw these trees, a good value for distance is 1.
Understanding sysTree3.txt

Here is the first example L-system:

base (50)F
rule F (50) f ![30)−F<g(5)L>] ![40)+F<g(5)L>]!F
rule (x)f (1.5∗x)f (1.25∗x)f (1.7∗x)f
rule (x)− (x∗1.2)− (x∗0.8)− (x∗1.05)− (x∗1.0)− (x∗0.95)− (x∗0.87)− (x∗1.12)−
rule (x)+ (x∗1.2)+ (x∗0.8)+ (x∗1.05)+ (x∗1.0)+ (x∗0.95)+ (x∗0.87)+ (x∗1.12)+

And the observations we made about it:

- Turns, forwards, and leaf-sizes are modified by modifiers.
- The structure of the tree is deterministic (we always move forward and make two branches (or subtrees) to the left and right, and the grown the branch (or subtree) up.
- Distances and angles are stochastic
- The scales in front of F and f should be of comparable sizes.

Understanding sysTree2.txt

Here is the second example L-system (where you are supposed to assume that the rule is all on one line):

base (5)! (100)F
rule (x)F (x)F ![2∗x/3)F<g(5)L>] ![2∗x/3)F<g(5)L>]!(1∗x/2)F<g(5)L>
(x)F ![2∗x/3)F<g(5)L>] ![2∗x/3)F<g(5)L>]!(1∗x/2)F<g(5)L>
(x)F ![2∗x/3)F<g(5)L>] ![2∗x/3)F<g(5)L>]!(1∗x/2)F<g(5)L>

And the observations we made about it:

- Turns, forwards, leaf-sizes, and widths are modified by modifiers.
- The structure of the tree is stochastic (we branch forward and left, or forward and right, or left and right).
- Distances are decreased as we branch.