

Trees are a key part of many virtual environments, thus there is a high demand for realistic tree models. Creating such models by hand, including level of detail, is very time consuming. However, the fractal-like structure of a tree may appear complex, but it can be approximated by a set of simple rules. This enables us to construct a tree generator and editor that can produce different tree types using few parameters and produce any number of randomized instances of a tree type. Furthermore, many applications such as games or VR/AR have strict performance budgets, thus level of detail is needed. Different detail levels also must be visually similar to hide runtime transitions between them, further increasing the difficulty of creating such models by hand. We exploit a high-level tree structure the generator provides to create versions of the tree with lower geometrical complexity, mainly by replacing branches with their planar images. This process is fully automatic. The work consists of a generator library capable of creating trees with a highly customizable detail level and a tree editor that can export generated meshes.