Sketch-based Modeling

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Abstract

Sketching is one of the most natural ways to exchange ideas. It has been used by human beings since prehistory. Research has shown that human beings have an inherent ability to understand sketches. This is why sketch-based interfaces for 3D modeling are so appealing; creating and animating 3D shapes could become as simple as drawing with a tablet and a digital pen. The purpose of this tutorial is to explore the most important aspects of sketch-based modeling, from the preprocessing of sketch strokes to the problem of 3D reconstruction. We will first explain some aspects of how humans interpret sketches. The second part of the tutorial will be dedicated to the problem of filtering and processing strokes. Other parts of the tutorial will focus on the sketch-based modeling of curves and surfaces using multi-view and single-view sketches. Sketch-based modeling using prior-knowledge will be also discussed; this class of methods is particularly well adapted to the 3D reconstruction of complex shapes. The last part of the tutorial addresses sketch-based interfaces for editing 3D shapes.