Interactive Sculpting of 3-D Computer Graphics Models
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The past thirty years has seen significant progress in the field of computer graphics, particularly in the area of rendering. However, the creation of realistic models is nearly as tedious today as it was 30 years ago, and many types of complex materials simply cannot be represented with today's graphics systems. To address these problems, we propose to develop a new 3-D modeling system using the metaphor of sculpting real materials. We believe that by combining haptic output devices, stereoscopic displays, physically-based surface models, and newly developed surface representations it will be possible to approach the feel, naturalness, and flexibility of interacting with materials such as marble, wood, metals, and paints.

This research will also serve as a platform for studying the next generation user interfaces, sensory fusion, and material representations. This work should find application in a variety of fields ranging from computer-aided design to the movies.