Touching Geometry

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Geometric models and algorithms have been traditionally designed to support graphics, visualization, and spatial reasoning. Recent developments in human computer interfaces are now making it possible to "touch" virtual geometric objects — we can feel interaction forces with haptic interfaces and hear realistic contact sounds with auditory displays. These interfaces pose new challenges for the design of geometric algorithms. I will describe recent progress in my group towards developing new interfaces and algorithms for rich, multi-modal interaction with physical models. I will also describe the acquisition of these new types of models from real objects using ACME, our robotic measurement facility.