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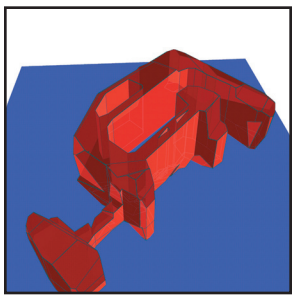
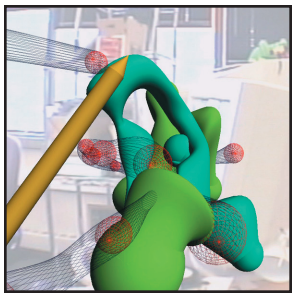
Selected projects 2001—2003

for complete listing, please see **http://acg.media.mit.edu/people/simong**



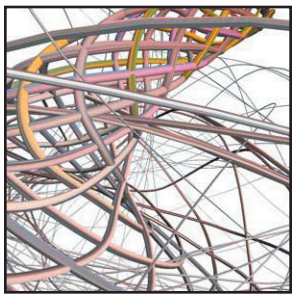
Eyebox

Eyebox is an 18" x 18" x 18" foam-core cube outfitted with six inexpensive webcams and two fluorescent lights. Any object six inches on a side or less can be placed into the box, and in approximately one second, the machine produces a full volumetric reconstruction of the object from the visual hull of its six silhouettes. It then uses a volume histogram taken around the object's centroid to try to match the identity of the object with others it has seen before. *Eyebox* costs orders of magnitude less than other current 3D scanners.



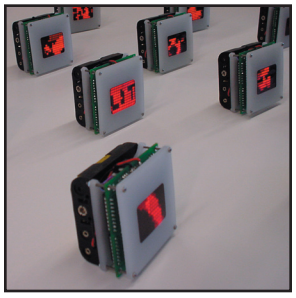
Installation

Installation is a system consisting of a viewing window and stylus—both tracked in three dimensions—which allows users to create virtual forms and install them permanently into real space. The viewing window is a flat-panel display outfitted with a tiny camera on the back through which the user sees a live video feed of the room. The user can manipulate the stylus to create gestural 3D forms and position them in space. Virtual objects created in the system respond as though they were physically in the space of the room.



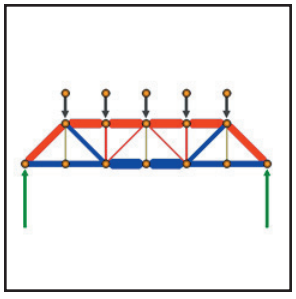
Weaver

Explorations of industrial braiding and weaving led to the design of a grammar capable of describing a wide variety of woven patterns. *Weaver* applies the patterns to user-defined surfaces—in this case an exploded tube. The resulting weaves can be complex, and depend both on the description of the weave pattern and the topology of the surface on which the weave is applied. Testa Architects has used *Weaver* to prototype surfaces for a proposed office tower made of structural carbon fiber.



LittleVision

LittleVision is a handheld 10 x 14 LED display device I created that can record and play 25 seconds of video. We film videos using a webcam and custom software I wrote to compress and burn the movies directly onto the PIC microcontroller onboard the display, making it a self-contained video brick. I have recently developed a tiny camera that lets us record directly to the board without the use of a PC. We have run several workshops in which participants build these displays and then film short movies for them.



Active Statics

Active Statics is a set of eight highly interactive demonstrations that involve users in experimentation with the relationship between structural form and forces. These demonstrations are based on *graphic statics*, a body of techniques used by such masters as Antonio Gaudi, Gustave Eiffel, and Robert Maillart. Their purpose is to help students of architecture develop a thorough understanding of basic principles of structural behavior, and to provide them with tools and knowledge to help them design efficient, elegant structures.