Sketchy Thoughts
History of sketching systems

Sketchpad [Sutherland 1963]

SKETCH [Zeleznik et al 1996]

Teddy [Igarashi et al 1999]

Fibermesh [Nealen et al 2007]

ILoveSketch [Bae et al 2008]

Analytic 3D drawing [Schmidt et al 2009]
3D Digital sketching & sculpting is hard!

- 2D input (mouse, pen tablet, multi-touch, pressure, tilt, speed...) to define 3D.

- Inferring 3D shape from 2D input is often ambiguous.

- 3D input (phantom, mocap) have poorer fidelity, haptics and ergonomics compared to 2D input.

- 3D shape is viewed on a 2D display (volumetric and stereo displays have poorer fidelity).

- Perceptual bias in 2D views of 3D shape.
2D to 3D: Teddy

CREATION
Multi-view vs. Single-view sketching
Multi-view vs. Single-view sketching
Mixing Metaphors
Sketching & sculpting evaluation

- Must build a complete system to be useful in a creative setting.

- Creativity of the interface can be hard to quantify.

- Comparative workflows/benchmarks across systems are hard to define.

- Unbiased users across multiple systems are hard to find.

- Proprietary issues with creative content.

Possible solutions:
classrooms, iterate with experts, evaluate in the wild, forums, anecdotal.
Perceptual Bias
Perceptual Bias
Sketch domains
Sketching for modeling

- When should you surface (exploiting ambiguity)?
- Where are the surfaces?
- What are the surfaces?
Sketching for animation
Sketching for animation

- Motion trails or fronts are not always sparse.
- 3D motion trails can be too abstract to conceptualize.
- 3D motion trails can be too 3 dimensional to specify.
Projects

- Physically-based/animated sketching.
- Artistic sketching of video.
- Facial modeling and animation (multi-touch).
- Flipbooks: sketching for animation.
- Drawing scenery, landscapes, urbanscapes (architecture).
- Production Drawing.
- Anatomic annotation.
- Perception of line drawings (Where is the surface in a line drawing?).
- Ergonomics of sketching curves (Given two points and directions how do we connect them?).
- Sketching for audio-interactive visualization.
- Sketching non-linear projections.
- Sketching across 3D canvases.
- A taxonomy of sketch interfaces.
- Sketch UI.
- Sketch interactive art installation.
Projects

• Physically-based/animated sketching.
Projects

• Artistic sketching of video.

Linear Video Browsing
Projects

• Facial modeling and animation.
Projects

- Flipbooks.
Projects

• Drawing scenery, landscapes, urbanscapes (architecture).
Projects

• Production Drawing.
Projects

- Perception of line drawings (Where is the surface in a line drawing?).
Projects

• Ergonomics of sketching curves (Given points and directions how do we connect them?).
Projects

• Sketching audio.
Projects

• Sketching nonlinear projections.
Projects

- Sketching across 3D canvases.