ModelCraft:
Capturing Freehand Annotations and Edits on Physical Models

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ModelCraft

Physical Model made from Anoto pattern paper

3D Cad representation

Logitech IO2 Pen
ModelCraft

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3D Cad representation

Logitech IO2 Pen
Video
Relate Work (1)

- Tracking 3D model drawing
  - 3D Painting system
    [Agrawala et al, 1995]
  - Augmented Reality Technique
    [Grasset et al 2005]

- 3D Sketch system
  - Teddy [Igarashi, et al 1999]
  - SKETCH [Zeleznik, et al. 1996]
Relate Work (2)

- Tangible interface-Spatial Interaction
  - URP [Underkoffler and Ishii, 1998]
- Command Selection
  - Scriboli [Hinckley, et al.2005]
  - PapierCraft [Liao, et al.,2005]
Strength of ModelCraft

- Easy Setup
  - Inexpensive: paper and pen
  - Quick setup: simple calibration

- Scalability
  - Number of Models, Pens, ...

- Portability
  - Capture information in model’s reference
Life Cycle of a Model

- Unfolding
- PADD infrastructure
- Annotation & Command
Life Cycle of a Model

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Life Cycle of a Model

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Annotation and Command

- Two types of Mode
  - Annotation: blue pen
  - Syntax based command: red pen
    - Executable sketch
    - Pigtail delimiter
    - Command letter
ModelCraft Result
User Feedback: Interviews (1)

- UMD Architecture Professor
  - Pros
    - Easy syntax based command language
    - Developing 3D thinking
  - Cons
    - Pen tracking problem

Peter Elsenman, House 11a, 1999
User Feedback : Interviews (2)

- BeeryRio, DMJM : Two user group
  - Design Perspective
    - Prototyping, Massing
  - CAD Perspective
    - High level of details
    - Finalization stage

Rosana Keleher, BeeryRio, 2005
Limitations

- Tracking Performance
- Freespace Interaction
- Limited Feedback
- Unfolding Process

Distorted Field of View
Future Work – Technique (1)

☐ Larger objects with various topology
☐ Other rapid prototyping process
☐ Complex Surface
Future Work – Technique (2)

- Better tracking technology

*Dataglyph in structured light Chen, Jin-dong, PARC*
Future Work - User Study

- Cube project

K.C Zellars, Cohen, Deutsch et al
Summary

☐ ModelCraft
  ■ 3D Annotation capture system

☐ Positive preliminary feedback
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