Design Tools

MICHAEL BERNSTEIN
CS 376
Design tools should...
[Hartmann, PhD thesis ’09]

- Decrease UI construction time
- Isolate designers from implementation details
- Enable designers to explore an interface technology previously reserved to engineers or other technology experts
Goal: facilitate rapid iteration

[Hartmann, PhD thesis ’09]

- Prototypes enable exploration and iteration around concrete artifacts
- The more fluid the prototyping process is, the more you can learn before you sink time into engineering
Early stage design
What tools do designers use?

[Myers et al., VLHCC ‘08]

- Survey of 259 interaction designers
SILK: Sketching Interfaces Like Krazy
[Landay, CHI '96]

- Combine the fluidity of paper-based sketching with the interactivity of tools
- Technique: sketch recognition of basic UI components
DENIM: web site storyboarding

[Lin et al., CHI ’00]

- Enable fluid, informal interactions for web site design
- Work at a higher level of abstraction than HTML
Designer’s Outpost

[Klemmer et al., UIST ’01]

- Fluid interactive brainstorming that bridges physical and digital artifacts
Design galleries

[Marks et al., SIGGRAPH '97]

- Automatically generate perceptually-varying alternatives within a design space
Juxtapose: parameter tuning

[Hartmann et al., UIST '09]
Voyant: crowd feedback
[Xu, Huang, and Bailey CSCW ’13]
DesignScape: interactive layout

[O’Donovan, Agarwala, and Hertzmann CHI ’15]
Physical prototyping
The challenge of physical prototyping

- Prototype the bits, or prototype the atoms?
- Goal: lower the threshold to prototype interactive systems that depend on electronics and physical materials
Phidgets
[Greenberg and Fitchett, UIST ’01]

- USB plug-and-program I/O devices
  - servos
  - LEDs
  - buttons
  - sliders
- Goal: program physical devices like you would a GUI widget
Led to: Arduino

- Maker board for artists, programmers and hobbyists
Led to: Makey Makey

[Silver et al., TEI '12]

- Alligator clips map onto keystrokes
d.tools: prototyping behavior

[Hartmann et al., UIST ’06]

- Plug-and-play HW, visual statechart behaviors

prototyping with d.tools
Sensor interaction by demonstration

[Hartmann et al., CHI ’07]
Fabricating capacitive hardware
[Savage et al., UIST ’12]

- Author behaviors
- Software does circuit layout
3D printing+camera prototypes
## Discussion rooms

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