CSE 40416

System Interface Design

Prof. Aaron Striegel
Department of Computer Science & Engineering
University of Notre Dame

Lecture 34 – November 20, 2009
Today’s Lecture

☐ Playing with Sound
☐ Aesthetics
   ■ More examples
☐ Focus / emphasis
☐ Labels / captions

Reminders
- Blog Post (Week)
- Project 3
- Alpha Submission
Different Interfaces

Wii Theremin - How It Works

http://www.youtube.com/watch?v=wINCrstV50HA
Discussion

- Extend to the Surface only
  - Thoughts?
Groupings

- Functional groupings of associated elements

- Recommendations
  - Create spatial groupings close to five degrees of visual angle (1.67”, 6 to 7 lines)
  - Evenly space within grouping
  - Separate liberally between groups with white space
  - Provide line borders
  - Provide meaningful titles
Group Delineation

☐ Proximity
  ■ Close elements are perceived as a group

☐ Similarity
  ■ Call attention to various groupings

☐ Closure
  ■ Users will automatically group if similar
  ■ Effort to ID pattern vs. individual item
    ☐ Matching pattern (line, border, symbol)
    ☐ Ordering (#’s, alphabet)
    ☐ Visual org principles
Discussion

- Beck / Palmer 2002
  - Difficult to ignore color similarity
  - Proximity stronger influence vs. common ground
  - Color similarity > proximity, common region
  - Color, shared background, co-location > outlines
Let’s Try It

- Toast
- Cow
- Donut
- Pig
- Bedroom
- Kitchen
- Bagel
- Goat
- Bathroom
- Cereal
- Sheep
- Basement
Let’s Try It

- Toast
- Cow
- Donut
- Pig
- Cereal
- Bedroom
- Goat
- Bagel
- Bathroom
- Kitchen
- Basement
Let’s Try It

- Toast
- Cow Bedroom
- Donut Kitchen
- Pig

- Cereal Bathroom
- Sheep
- Bagel Basement
- Goat
Let’s Try It

- Toast
- Bagel
- Cereal
- Donut

- Cow
- Sheep
- Pig
- Goat

- Bedroom
- Kitchen
- Bathroom
- Basement
Let’s Try It

- Toast
- Bagel
- Cereal
- Donut

- Bedroom
- Kitchen
- Basement
- Bathroom

- Cow
- Sheep
- Pig
- Goat
Let’s Try It

**Breakfast Foods**
- Toast
- Bagel
- Cereal
- Donut

**Rooms in a House**
- Bedroom
- Kitchen
- Basement
- Bathroom

**Farm Animals**
- Cow
- Sheep
- Pig
- Goat
Focus / Emphasis

☐ Brightness
  ◼ Good attention-getting
  ◼ Indicate
    ☐ Items in error
    ☐ Data on an inquiry screen
  ◼ External consideration
    ☐ Contrast setting on monitor
Focus / Emphasis

☐ Reverse polarity
  ■ Dark text on light background
    ○ Old text screens -> light text on dark background
  ■ No difference in performance
  ■ Generally more fatiguing
  ■ Can work for select screen components
  ■ Iridescence
    ○ Can bleed into characters

Shields up
Shields down
eBook Readers

- Older school
  - No backlight
  - Use normal light to be able to read
Distinctive Typeface

- Multiple fonts
  - Can differentiate components
- Careful on sizing
  - Header versus data entry
- Guideline
  - Maximum two at a time
Let’s Try It

Breakfast Foods
- Toast
- Bagel
- Cereal
- Donut

Rooms in a House
- Bedroom
- Kitchen
- Basement
- Bathroom

Farm Animals
- Cow
- Sheep
- Pig
- Goat
Let’s Try It

Breakfast Foods
- Toast
- Bagel
- Cereal
- Donut

Rooms in a House
- Bedroom
- Kitchen
- Basement
- Bathroom

Farm Animals
- Cow
- Sheep
- Pig
- Goat
Let’s Try It

**Breakfast Foods**
- Toast
- Bagel
- Cereal
- Donut

**Farm Animals**
- Cow
- Sheep
- Pig
- Goat

**Rooms in a House**
- Bedroom
- Kitchen
- Basement
- Bathroom
Focus / Emphasis

☐ Styles in a Font

☐ Subtle differences

- **Bolding** – generally preferred
- *Italics* – less detectable / legible
- **Underlining** – adds noise / reduces legibility

☐ Web functionality meaning
Focus / Emphasis

- Blinking
  - With great power comes great responsibility
  - High visual fatigue
  - Turn off once attention captured
- Guidelines
  - 2 to 5 Hz
  - Duty cycle $\geq 50\%$
  - Wink vs. blink (duty cycle $>> 50\%$)
Focus / Emphasis

- Line rulings / boxes / frames
  - Horizontal – break a screen
  - Vertical – note up / down reading
  - Denote groupings
    - Help reinforce
  - Guidelines
    - <= 3 thicknesses
    - <= 2 line styles
Example

I would like you to read this then pause.

Enjoy the break near the tail end of class.

For the third project, you should hopefully have begun coding in the lab, either on the simulator or with the Surface Dev unit. Our bulb has not yet arrived and will likely not show up until after Thanksgiving.
Focus / Emphasis

☐ Emphasize / assist identification
  ■ Which drawn to first
  ■ Bright vs. dark colors
    ☐ Use for importance

■ Display
  ☐ <= 4 colors -> mostly text
  ☐ <= 6 colors -> statistical graph
Focus / Emphasis

☐ Koyani et. al 2004
  - Fixate on larger items
    - Auto-tuned though to ignore ads / decoration
  - Animation
    - Movement effective
    - Annoying if not relevant or useful
    - Should stop after attention captured
Resnick / Sanchez 2004

- Study on labels / efficiency
- Good labels
  - 90% more efficient in finding
  - 25% fewer clicks
  - Less errors
  - More items found
  - High user satisfaction
Captions / Labels

Study findings
- Identify controls w/labels and captions
  - Avoid jargon
  - Can sometimes use structure (address)
- Fully spell captions out in meaningful way
- Use mixed-case font
- Capitalize first letter of each sig word
- End each caption with a colon
- Choose distinct captions
- Provide consistency
Example - Distinct

First Amount: 
Last Amount: 
This Amount: 
That Amount: 
Who Cares Amount: 

Example - Distinct

AMOUNT >>
First: [Blank]
Last: [Blank]
This: [Blank]
That: [Blank]
Who Cares: [Blank]
Customizable UI - Android

Sony Ericsson Xperia X10 - http://vimeo.com/7691669
Questions?

- Weekly Blog
- Project 3
- Alpha Submission