

IN4MATX 148: Ubiquitous Computing Prototyping and Projects

Week 8: Design Crit 5, Interactive sketches/
prototypes, Ambient displays



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On Deck for Tonight

- Part I: Design Crit 5
- Part II: Interactive sketches/prototypes
 - *Guest lecturer: Prof. Khai Truong, University of Toronto*
- Part III: Ambient displays
 - *Your Exercise for the Week*
- Preparation for the home stretch
 - *Plans for next week (Memorial Day holiday)*
 - *Group project and individual portfolios*

Course Logistics

- Animated sequences exercise (4) graded
 - Grading questions/concerns: email Miya
 - If not satisfied/resolved, email me for a re-grade
 - *Re-grades require a 1 paragraph justification for a re-grade, and re-grades will involve the entire assignment*
- Video sketch exercise (5) due **now!**
 - *Email files to svoida@acm.org and nsylvest@uci.edu*
 - *Graded ASAP*
- Questions? Comments? Concerns?

Part I: Design Crit 5



Part II: Interactive sketches/prototypes

Special Guest Presenter: Prof. Khai Truong,
University of Toronto

From Sketches to Prototypes

Early design

Brainstorm different ideas and representations

Choose a representation

Rough out interface style

Task centered walkthrough and redesign

Fine tune interface, screen design

Heuristic evaluation and redesign

Usability testing and redesign

Limited field testing

Alpha/Beta tests

Multitude of sketches

Sketch variations and details

Sketch or low fidelity prototypes

Low to medium fidelity prototypes

High fidelity prototypes

Working systems

Late design

Part III: Ambient displays

based on lecture by Andreas Butz, Thorsten Buring
<http://www.medien.ifi.lmu.de/lehre/ws0910/iv/IV-W09-12-ambient.pdf>

Ambient Displays

- Based on *information visualization*
 - *“The use of computer-supported, interactive visual representations of abstract data to amplify cognition” (Card et. al, 1998)*
 - InfoVis is all about providing interactive representations of complex, high-dimensional data for exploration and insight
- Ambient displays use the same ideas of representation and abstraction to translate information from the digital domain into the real world

Ambient Displays

- Usually low level of interaction (if any)
- Abstract summary of (usually real-time) non-critical information (e.g., weather, stock price)
- Embedded into the (physical or virtual) environment
- Based on the concept of *peripheral awareness*: Users' focus should remain with their primary tasks
- Non-distracting update of information
- Relies on pre-attentive processing; users can find information at a glance
- Often include aesthetic and artistic goals

Dangling String

- Natalie Jeremijenko
- String hangs from ceiling, provides information about network traffic
- Motor is connected to Ethernet cable
- Slow network: twitches, busy network: crazy!



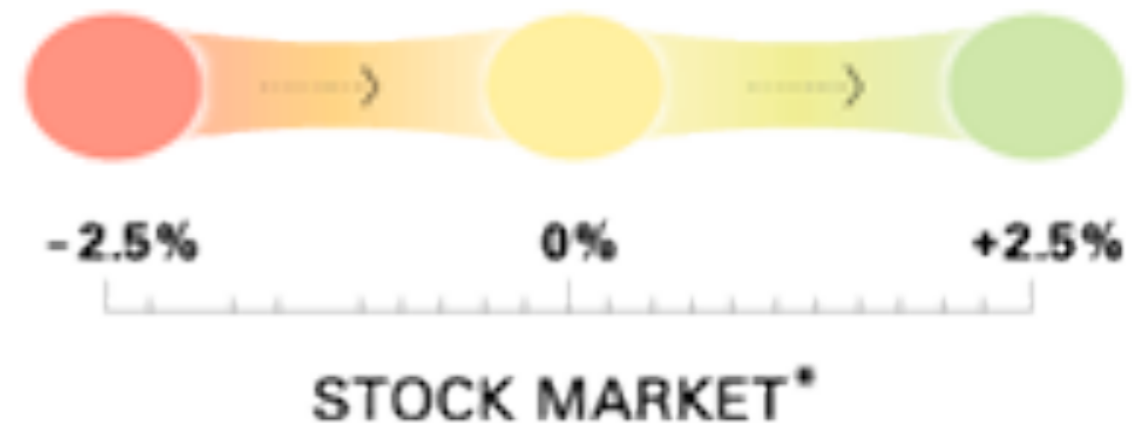
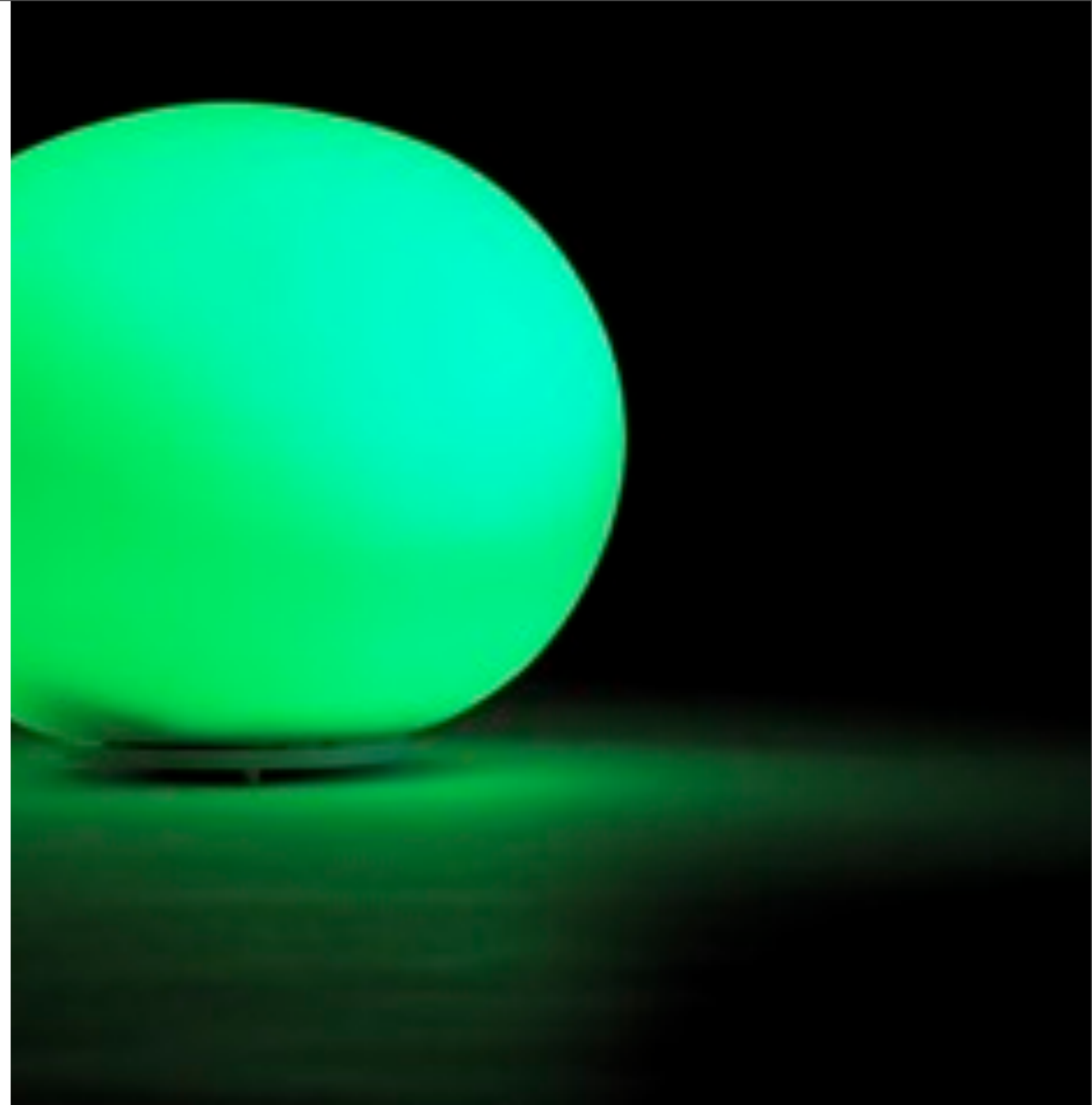
Bus Monitor

- Mankoff et al.
(UC Berkeley)
- Buses represented by paper tokens on a string hanging from the inside of a bag
- Bus tags remain hidden until the bus approaches, moves up as the bus gets closer



Ambient Orb

- Commercial internet appliance
- Glass lamp containing colored LEDs changes color based on changes in value of interest
- Often mapped to weather forecasts, stock prices, etc.



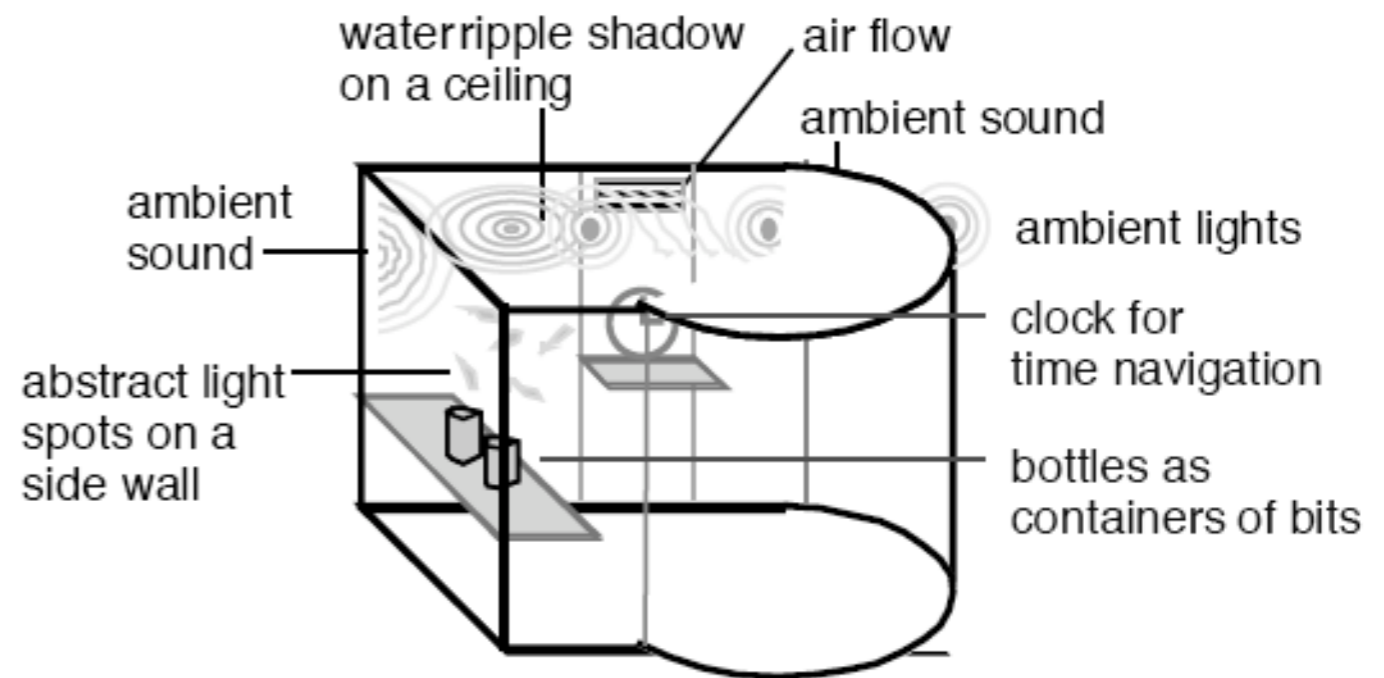
Information Percolator (CMU)



<http://www.cs.cmu.edu/~hudson/bubbles/>

AmbientROOM (MIT)

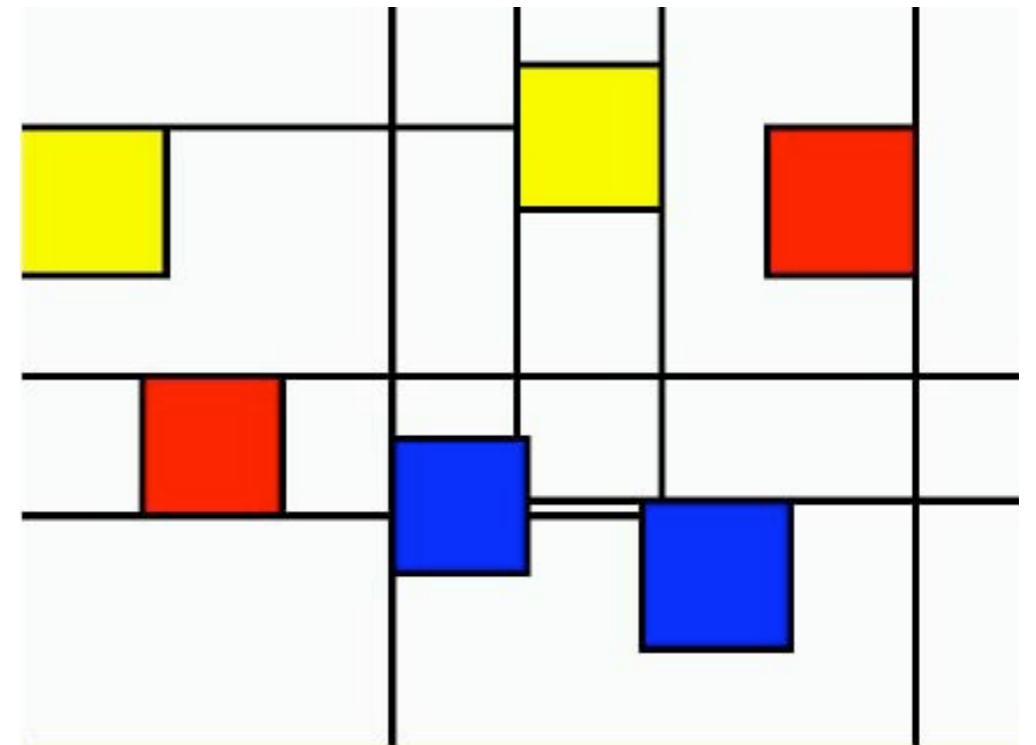
- Experimental architectural space to serve as interface between humans and electronic information
- Display multiple sources of information in the background
- Occupants can monitor these sources concurrently



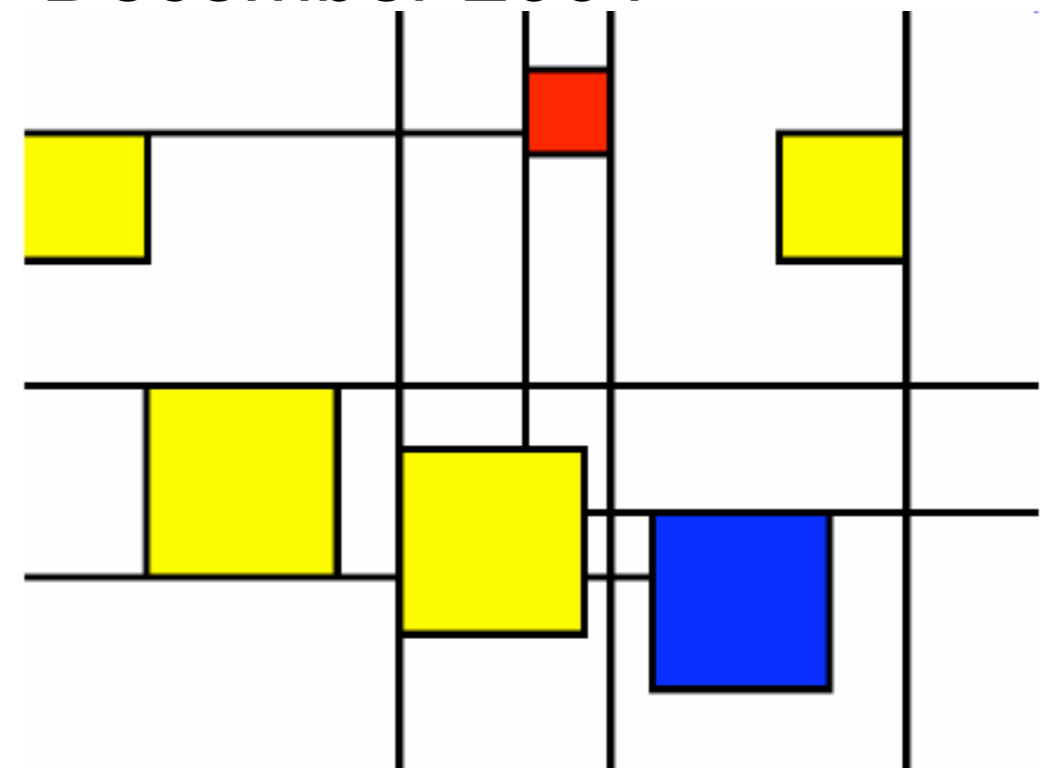
Informative Art

- Encodes information in the style of Piet Mondriaan
- Each block represents the weather in a world city (LA, Göteborg, Toyko, Rio, Cape Town, Sydney)
- Size encodes temperature
- Color encodes weather (yellow=sun, red=cloud, blue=rain)

June 2001



December 2001



Digital Family Portrait

- Familiar? We've seen this from *Ubicomp in the Home*
- Subtle encoding of family member's activity information for a month
- Activity level is represented by the size of the butterflies
- Aesthetic, difficult for "outsiders" to read



YOUR **EXTRA CREDIT** EXERCISE

Design *and implement* an ambient display.

Reflect the real-time value an information source using an motor (e.g., Phidgets) or *calm* background animation (e.g., assume that your screen is projected)

Teams of 1–4 students



Next Week

- **NO LECTURE** (Memorial Day long weekend)
- Each project group **needs** to schedule a meeting with me between May 29 and June 1 **(not optional!)**
 - *My schedule: <https://students.ics.uci.edu/~svoida/INF148/InstructorSchedule>*
 - *Send email with proposed meeting times to svoida@acm.org*
- Last chance to push through on group/individual projects
 - *(Hint: meet with your mentors this week!)*

In TWO Weeks (June 4) — LAST CLASS

- Interactive sketch/prototype exercise **Due**
(Bring physical prototype components to class; email ZIP archive of source code to svoida@acm.org)
- Final design crit (individual projects)
- Involving others (Wizard of Oz, think aloud)
- *Time to get started on your individual projects!*
- *Continue working on your group projects!*
- *Don't forget your readings — one more week!*