Enhancing Interface Design using Attentive Interaction Design Toolkit

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Interface Design vs. Interaction Design

• They are similar but different.
  – Interface design is about a person.
  – Interaction design is about a story/scenario.

• Interaction Design : Story
• Interface Design : Affordance

• Students need to do both quickly.
  – What kinds of tools/environments students need?
Is there an easy toolkit for designing interactive spaces?

Playful Interactive spaces [Krueger, 1985]

Since 1969, I have been trying to raise interactivity to the level of an art form as opposed to making art work that happened to be interactive.

-- Krueger
Attentive Interaction Design Toolkit

Attention Meter

- Monitoring people’s re-action
  - Face tracking
    - (location, proximity)
  - Nodding recognition
  - shaking head detection
  - Smiling detection
  - surprising detection.

ScanEval [Weiland, 1998]
Visual attentive interaction [Selker, 2004]

- Measuring people’s attention and engagement.

- Providing a real-time text summary of people’s facial behaviors.

- Logging into a text file for interfacing with other programs.
- Based on Intel OpenCV library
Engagement spectrum

Attention Meter

WebCAM

Art Painting

Attention Level

Reading

Engaging

Walking

Browsing

Staying

Smiling, nodding

Mouth opened (surprising)

Bored, head-shaking

TXT output

wx=0&wy=0&attentionlevel=0&face=1&nodding=0&shaking=0&moving=0&mouthsOpen=0&x0=44&y0=155&width0=55&height0=55&face_attention0=0&face_age0=0&face_nodding0=0&face_shaking0=0&face_moving0=0&last_blink0=1&mouthOpen0=1
Asian Reality 2005
Asian Reality 2005

- 5-day design workshop in Dec. 2005
  - 4-day work + 1 day exhibition
- 23 architecture students (5 undergrads, 18 grads) without formal computer science training
- Participants are familiar with Adobe Flash.
- Attention Meter was provided as input mechanism
Asian Reality 2005 亞洲真實設計工作坊
Asian Reality 2005 亞洲真實設計工作坊
Examples:

Eat-Eat-Eat 垂涎三尺

- A visual and interactive game for exploring food in the nightmarket

- A player can move and yield to catch food dropping from ceiling.
  - Face position
  - Audio threshold

- Around 50 people came and play with this game.

- Some of they did feel hungry after playing this game.
Examples:

Screaming Market 尖叫夜市

- An interactive show.
- The show gets exciting when the audience are screaming.
  - Face numbers
  - Attention score
  - Audio threshold
- Around 30 people came and play with this game.
- The atmosphere of the interaction reflects the real nightmarket madness.

Asian Reality 2005 亞洲真實設計工作坊
Examples:

Taiker Karaoke 台客KTV

- A re-active karaoke environment driven by madness.
- The MTV video gets crazier when people are nodding or shaking heads.
  - Nodding recog.
  - Shaking heads recog.
- Around 100 people came and play with this game.
- Easy to understand and striking.
Resourceful Environments

- Low-Floor, High-Ceiling Software Toolkit
  - Easy to pick up and use it immediately
  - Computer Clubhouse [Resnick, 1998]

- A stimulated place for Big Ideas [Papert, 2000]
  - Multidisciplinary collaboration

- Topics from participants’ daily life
  - Designing from their rooted experience

- Instructors
  - Providing theories and technical support for toolkits
Discussion

• Enabling graphic designers to make interactive spaces using face-based inputs.

• Faces as generic input device!

• Attention Meter is useful for customizing feedbacks, not to use it as a controlling interface.

• Attention Interaction Design Toolkit enables a low-floor, high-ceiling design environment.
Thank you

• Come to see the demonstration.

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