

Week 04

## More Interfaces Social Interaction / Emotional Interaction

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HCI 이론 및 실습 2020 Spring

Human-Computer Interaction+Design Lab \_ Joonhwan Lee

## 오늘 다룰 내용

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- Interfaces continued...
- Social Interaction
- Emotional Interaction

## Interfaces continued

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# Multimedia

- ❖ Combines different media within a single interface with various forms of interactivity
  - ❖ graphics, text, video, sound, and animations
- ❖ Users click on links in an image or text
  - ❖ another part of the program
  - ❖ an animation or a video clip is played
  - ❖ can return to where they were or move on to another place

# Pros and Cons of Multimedia

- ♦ Facilitates rapid access to multiple representations of information
- ♦ Can provide better ways of presenting information than can any media alone
- ♦ Can enable easier learning, better understanding, more engagement, and more pleasure
- ♦ Can encourage users to explore different parts of a game or story
- ♦ Tendency to play video clips and animations, while skimming through accompanying text or diagrams

# Virtual Reality and Augmented Reality

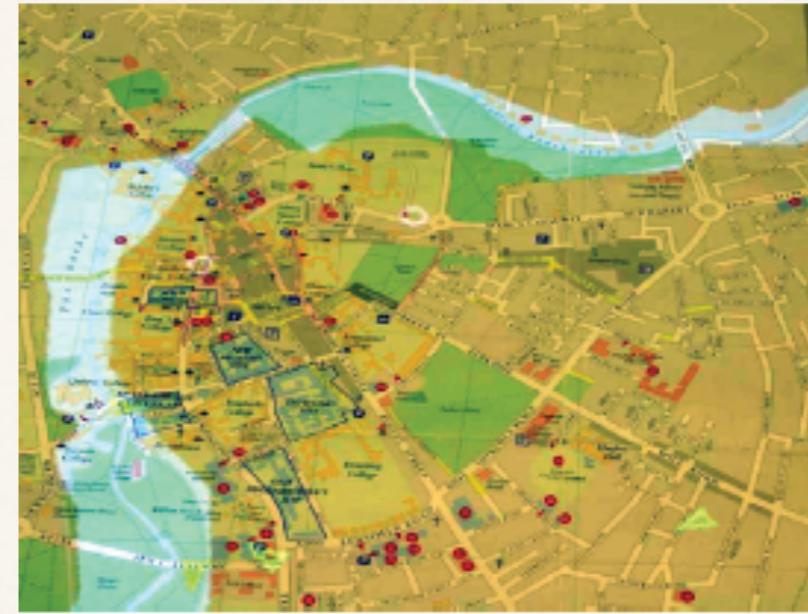
- ♦ VR
  - ♦ Computer-generated graphical simulations providing:
  - ♦ “the illusion of participation in a synthetic environment rather than external observation of such an environment” (Gigante, 1993)
  - ♦ Provide new kinds of experience, enabling users to interact with objects and navigate in 3D space
  - ♦ Create highly engaging user experiences



# Virtual Reality and Augmented Reality

- ❖ Augmented reality
  - ❖ virtual representations are superimposed on physical devices and objects
- ❖ Mixed reality
  - ❖ views of the real world are combined with views of a virtual environment
- ❖ Many applications including medicine, games, flying, and everyday exploring

# Virtual Reality and Augmented Reality



- ❖ What kind of digital augmentation?
- ❖ What kind of device?

# Virtual Reality and Augmented Reality

<https://www.youtube.com/watch?v=kPMHcanq0xM>



# Information Visualization

- ♦ Computer-generated interactive graphics of complex data
- ♦ Amplify human cognition, enabling users to see patterns, trends, and anomalies in the visualization (Card et al, 1999)
- ♦ Aim is to enhance discovery, decision-making, and explanation of phenomena
- ♦ Techniques include:
  - ♦ 3D interactive maps that can be zoomed in and out of and which present data via webs, trees, clusters, scatterplot diagrams, and interconnected nodes

# Pen

- ♦ Enable people to write, draw, select, and move objects at an interface using lightpens or styluses
  - ♦ capitalize on the well-honed drawing skills developed from childhood
- ♦ Digital pens, e.g. Anoto or nCode, use a combination of ordinary ink pen with digital camera that digitally records everything written with the pen on special paper



# Touch

- ♦ Touch screens, such as walk-up kiosks, detect the presence and location of a person's touch on the display
- ♦ Multi-touch support a range of more dynamic finger tip actions, e.g. swiping, flicking, pinching, pushing and tapping
- ♦ Now used for many kinds of displays, such as Smartphones, iPods, tablets and tabletops
- ♦ Research Issues: text input (typing issue), gesture

# Air-based Gestures

- ❖ Uses camera recognition, sensor and computer vision techniques (or gyro and accelerometer)
  - ❖ can recognize people's body, arm and hand gestures in a room
  - ❖ Kinect (depth camera), Myo
  - ❖ Movements are mapped onto a variety of gaming motions, such as swinging, bowling, hitting and punching
- ❖ Players represented on the screen as avatars doing same actions

# Air-based Gestures

<https://www.youtube.com/watch?v=ZxSPBAAfsvo>

Toward realistic hands gesture interface -  
Keeping it simple for developers and machines

Kfir Karmon\*, Eyal Krupka\*,  
Noam Bloom, Daniel Freedman, Ilya Gurvich, Aviv Hurvitz,  
Ido Leichter, Yoni Smolin, Yuval Tzairi, Alon Vinnikov,  
Aharon Bar Hillel

\* kfirk@microsoft.com, eyalk@microsoft.com

# Haptic

- ♦ Tactile feedback
  - ♦ applying vibration and forces to a person's body, using actuators that are embedded in their clothing or a device they are carrying, such as a smartphone
- ♦ Can enrich user experience or nudge them to correct error
- ♦ Can also be used to simulate the sense of touch between remote people who want to communicate

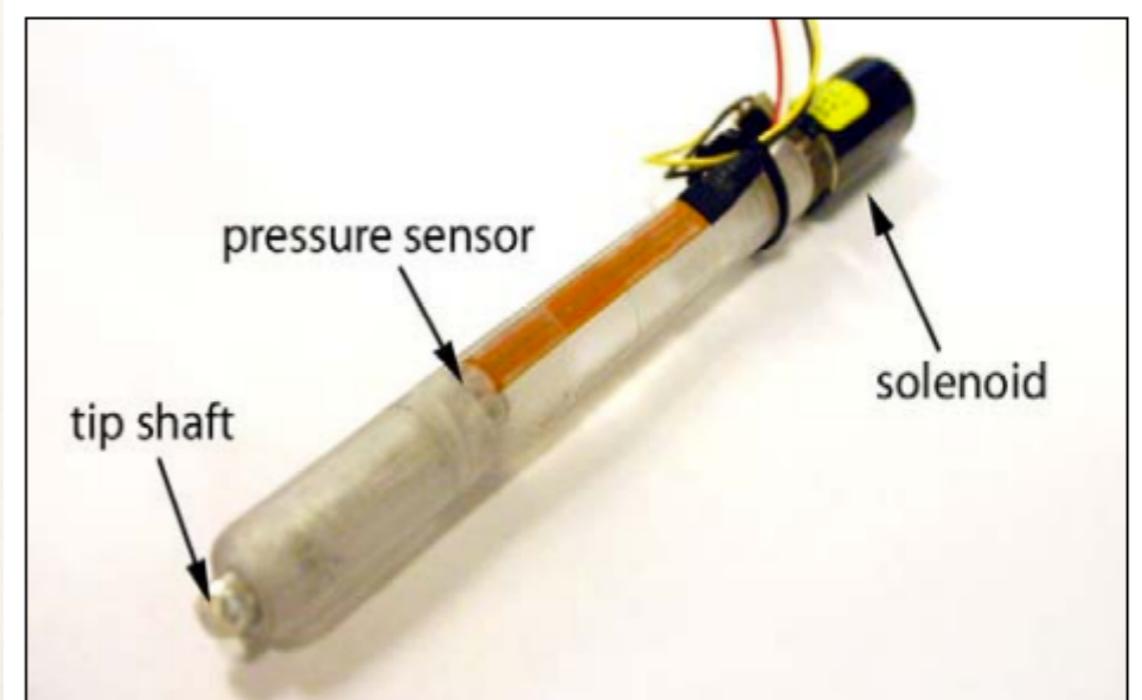


Figure 1. Haptic Pen – a tactile feedback stylus

# Haptic

## Haptic Pen: A Tactile Feedback Stylus for Touch Displays

Johnny Lee (1,2), Paul Dietz (1), Darren Leigh(1),  
William Yerazunis (1), Scott Hudson (2)

1 - Mitsubishi Electric Research Labs  
2 - Carnegie Mellon University

<https://www.youtube.com/watch?v=Sk-ExWeA03Y>

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# Tangible

- ♦ Type of sensor-based interaction, where physical objects, e.g., bricks, are coupled with digital representations
- ♦ When a person manipulates the physical object/s it causes a digital effect to occur, e.g. an animation
- ♦ Digital effects can take place in a number of media and places or can be embedded in the physical object

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# Tangible

## Illuminating Clay: A 3-D Tangible Interface for Landscape Analysis

Ben Piper, Carlo Ratti, and Hiroshi Ishii  
Tangible Media Group  
MIT Media Lab

<http://tangible.media.mit.edu/project/illuminating-clay/>

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# Tangible

<http://tangible.media.mit.edu/project/physical-telepresence/>

# Physical Telepresence

Shape Capture and Display for Embodied, Computer-mediated  
Remote Collaboration

Daniel Leithinger\*, Sean Follmer\*, Alex Olwal<sup>†</sup>, Hiroshi Ishii  
UIST 2014

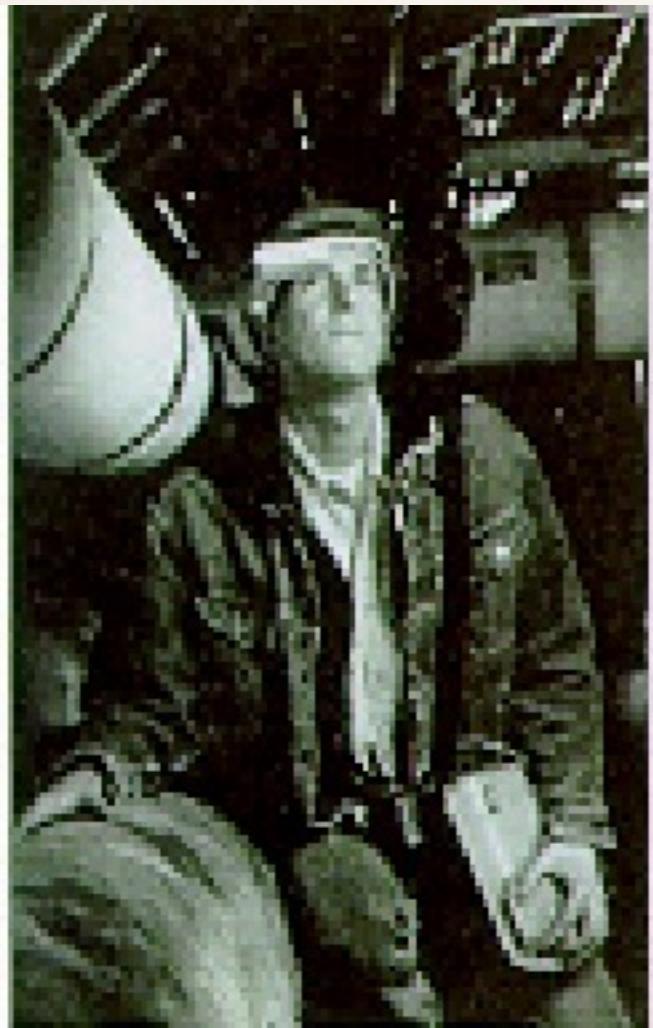
\* Authors contributed equally    † Secondary affiliations: KTH, Google [x]

# Wearables

- ❖ First developments were head- and eyewear-mounted cameras that enabled user to record what was seen and to access digital information
- ❖ Since, jewellery, head-mounted caps, smart fabrics, glasses, shoes, and jackets have all been used
  - ❖ provide the user with a means of interacting with digital information while on the move
  - ❖ Applications include automatic diaries, tour guides, cycle indicators and fashion clothing

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# Wearables



Carnegie Mellon  
Wearable Computing Group

# Wearables



The MIT Wearable Computing

# Wearables



# Wearables

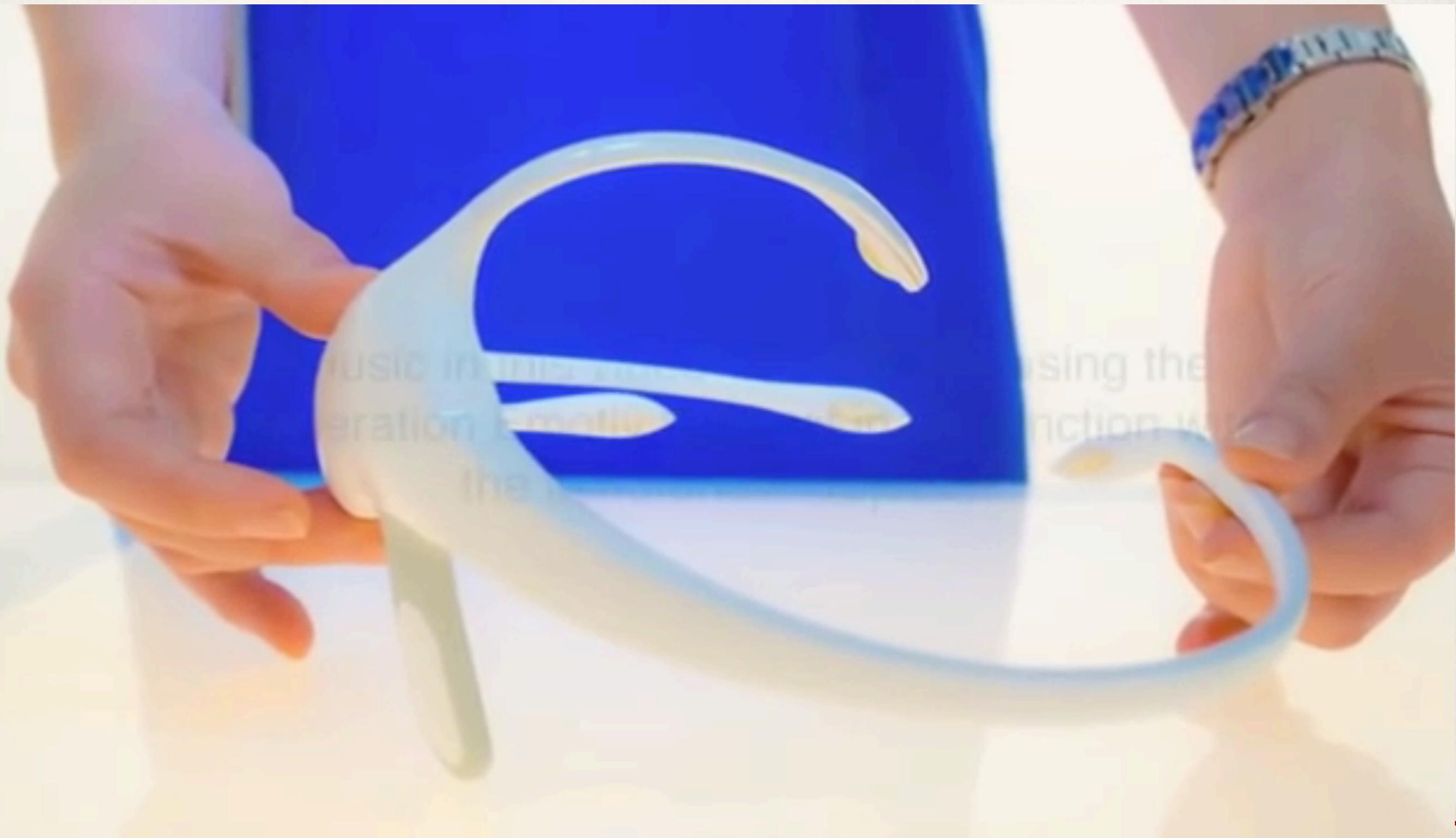


# Brain-Computer Interfaces

- ❖ Brain–computer interfaces (BCI) provide a communication pathway between a person’s brain waves and an external device, such as a cursor on a screen
- ❖ Person is trained to concentrate on the task, e.g. moving the cursor
- ❖ BCIs work through detecting changes in the neural functioning in the brain
- ❖ BCIs apps:
  - ❖ Games
  - ❖ enable people who are paralysed to control robots

# Brain-Computer Interfaces

<https://www.youtube.com/watch?v=eTGf2TkdvRw>



# Social Interaction

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# Being Social

- ❖ The use of social media increased.
  - ❖ No. of friends on Facebook - 338 in 2014
  - ❖ No. of work connections in LinkedIn - 500 or more
  - ❖ Are F2F conversations being superseded by our social media interactions?
- ❖ Question?
  - ❖ Friendship - how much overlap? (online vs real life)
  - ❖ How are the ways we live and interact with one another changing?
  - ❖ Are the established rules and etiquette still applicable to online and offline?

# Conversational Rules

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- ♦ Sacks et al. (1973) work on conversation analysis describe three basic rules:
  - ♦ **Rule 1:** the current speaker chooses the next speaker by asking an opinion, question, or request
  - ♦ **Rule 2:** another person decides to start speaking
  - ♦ **Rule 3:** the current speaker continues talking

# Conversational Rules

- ❖ **Turn-taking** used to coordinate conversation
  - ❖ A: Shall we meet at 8?
  - ❖ B: Um, can we meet a bit later?  
—
  - ❖ A: Shall we meet at 8?
  - ❖ B: Wow, look at him?
  - ❖ A: Yes what a funny hairdo!
  - ❖ B: Um, can we meet a bit later?
- ❖ **Back channeling** to signal to continue and following
  - ❖ Uh-uh. umm. ahh

# Conversational Rules

- ❖ **Farewell rituals**
  - ❖ Bye then, see you, yer bye, see you later....
- ❖ **Implicit and explicit cues**
  - ❖ e.g. looking at watch, fidgeting with coat and bags
  - ❖ explicitly saying “Oh dear, must go, look at the time, I’m late...”

# Breakdowns in Conversation

- ❖ When someone says something that is misunderstood:
  - ❖ Speaker will repeat with emphasis:
    - ❖ A: “this one?”
    - ❖ B: “no, I meant that one!”
  - ❖ Also use tokens:
    - ❖ Eh? Quoi? Huh? What?

# Remote Conversations

- ❖ Much research on **how to support conversations when people are ‘at a distance’ from each other**
- ❖ Many applications have been developed
  - ❖ e.g., email, videoconferencing, videophones, instant messaging, chatrooms
- ❖ Do they mimic or move beyond existing ways of conversing?

# Early Videophone



(a)



(b)

**Figure 4.2** (a) One of British Telecom's early videophones and (b) an early mobile visualphone developed in Japan

Source: (a) ©British Telecommunications Plc. Reproduced with permission (b) Reproduced by permission of Kyocera Corporation.

# VideoWindow System (Bellcore, 1989)

- ♦ Shared space that allowed people 50 miles apart to carry on a conversation as if in same room drinking coffee together
- ♦ 3 x 8 ft ‘picture-window’ between two sites with video and audio
- ♦ People did interact via the window and use same conversation technique (Kraut, 1990)



# Findings of VideoWindow System Study

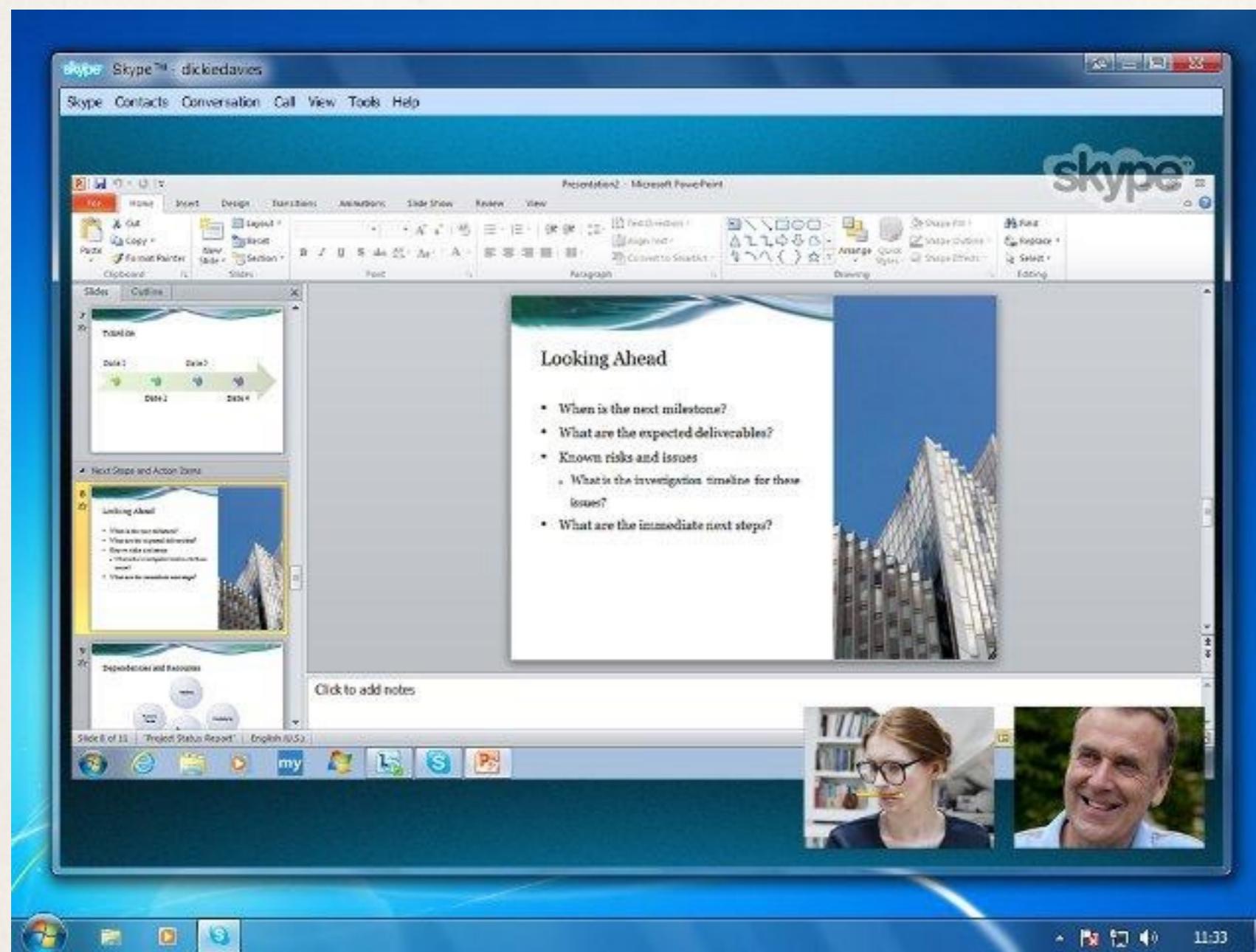
- ♦ Talked constantly about the system
- ♦ Spoke more to other people in the same room rather than in other room
- ♦ When tried to get closer to someone in other place had opposite effect - went out of range of camera and microphone
- ♦ Take longer conversational turns and interrupt each other less (O'Connaill et al, 1993)

# ClearBoard

**Tangible Media Group  
MIT Media Lab**

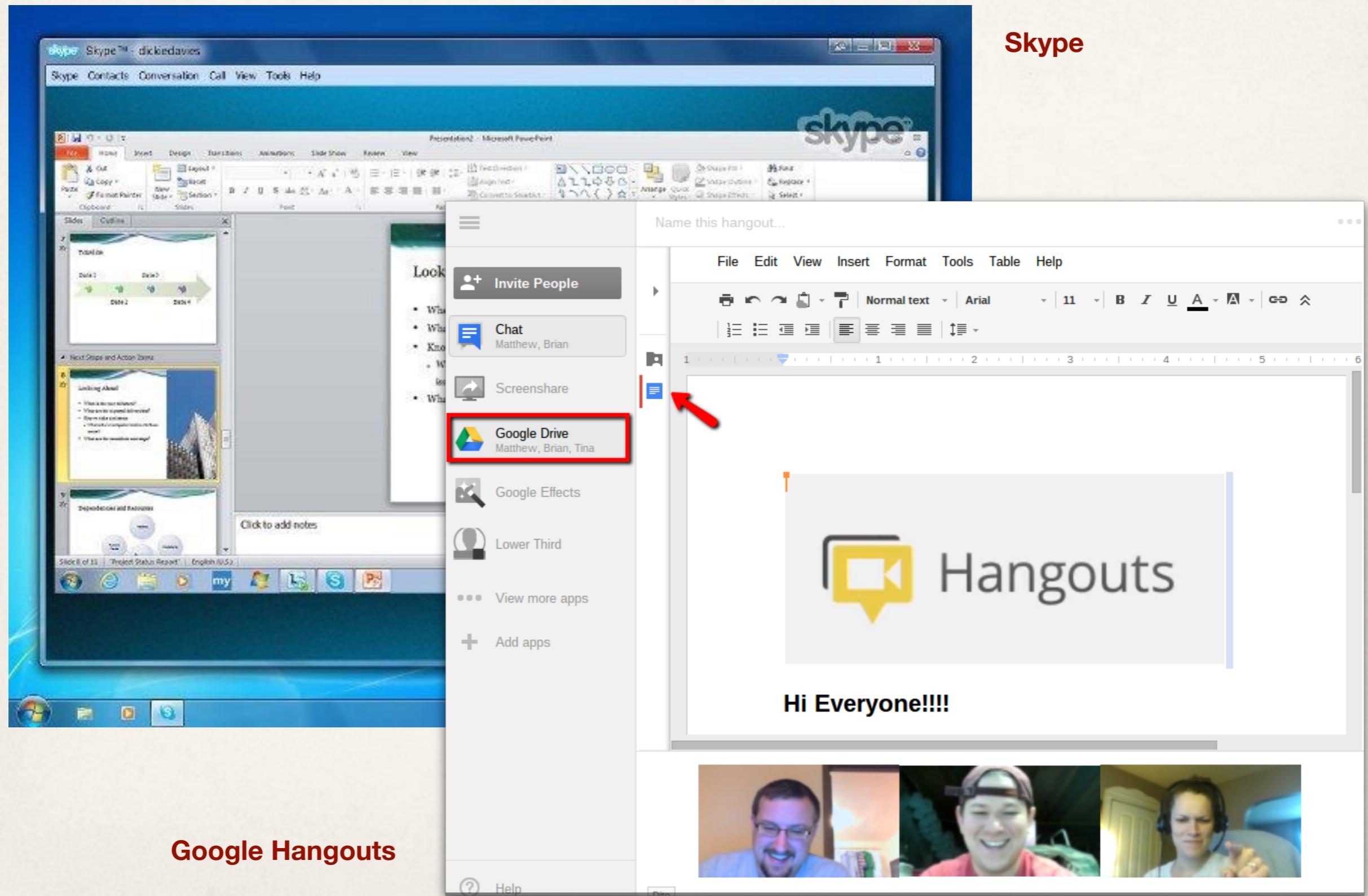
[tangible.media.mit.edu](http://tangible.media.mit.edu)

# Remote Collaboration



Skype

# Remote Collaboration



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# Telepresence

- ❖ New technologies designed to allow a person to feel as if they were present in the other location
  - ❖ projecting their body movements, actions, voice and facial expressions to the other location or person
  - ❖ e.g. superimpose images of the other person on a workspace

# Hypermirror

- Allows people to feel as if they are in the same virtual place even though in physically different spaces

People in different places are superimposed on the same screen to make them appear as if in same space



(woman in white sweater is in a different room to the other three)

(Morikawa and Maesako, 1998)

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# BiReality



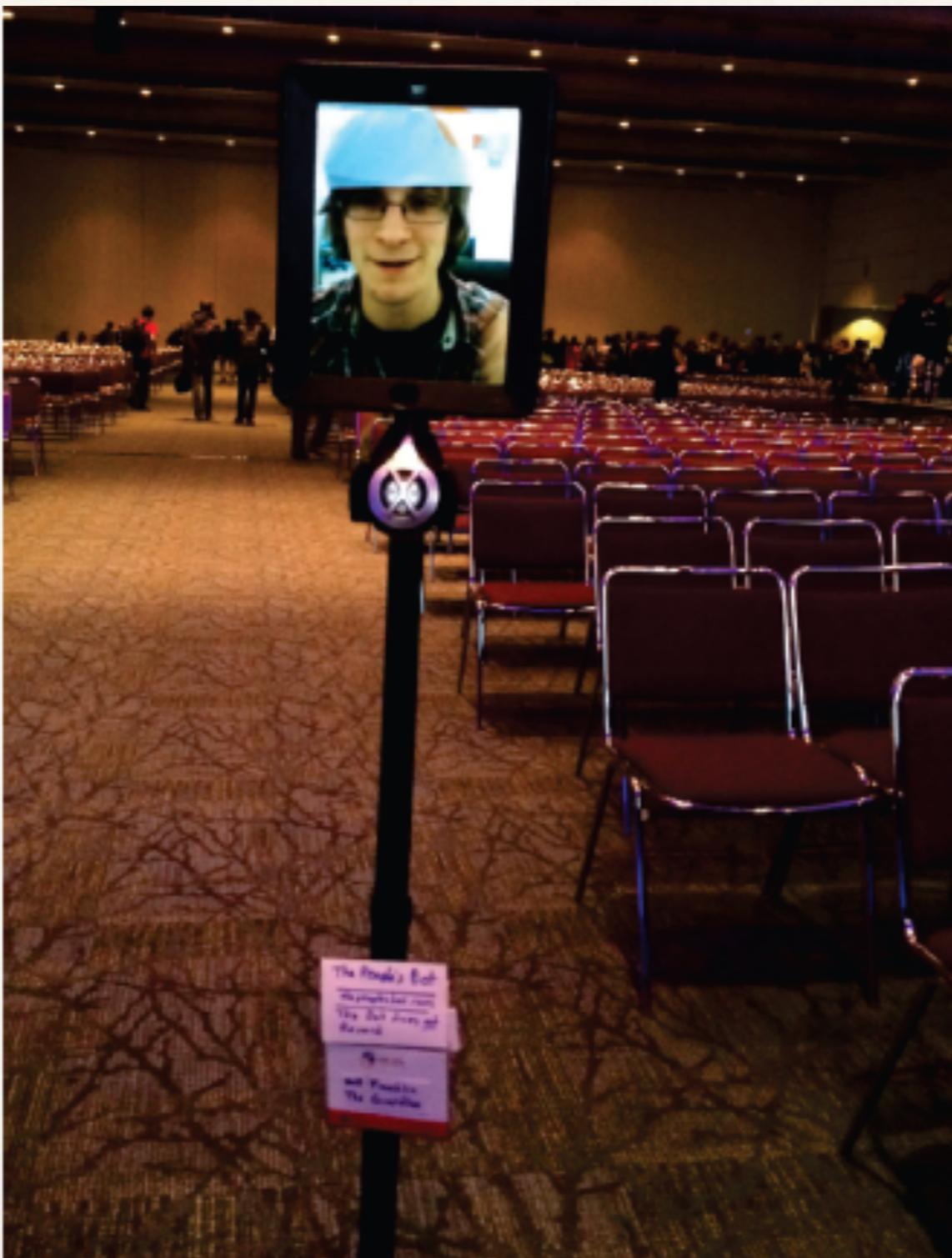
## Steps Towards Mutually-Immersive Mobile Telepresence

Norman P. Jouppi, Wayne Mack, Subu Iyer,  
Stan Thomas, and April Slayden

HP Labs  
Mobile & Media Systems Lab

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# The People's Bot attending CHI



<http://youtu.be/Lwr-81whEvk>

# Commercialized Product

## Double® Work from anywhere.

Your Double telepresence robot gives you a physical presence at work or school when you can't be there in-person.

### iPad

iPad Air 2 recommended,  
not included.

### Wide Angle Lens

Magnetic, included free.

### Audio Kit

Optional accessory.

### Motorized Height

Stand or sit.

### 6-8 hr Battery

Recharges in 2.

### Charging Dock

Optional accessory.

### Self-Balancing

Magical.

### Dual Kickstands

Park anywhere.



# Commercialized Product



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# From Imagination



# How much realism?

- ❖ Telepresence rooms try make the remote people appear to be life-like by using multiple high def cameras with eye-tracking features and directional microphones - are they enough?
- ❖ What about Skype? Google Hangouts? Zoom?

# How much realism?

- ❖ When a group of people act or interact together they **need to coordinate** themselves
- ❖ They use:
  - ❖ verbal and non-verbal communication
  - ❖ schedules, rules, and conventions
  - ❖ shared external representations

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# Hug



Hug - Jodi Forlizzi

# Co-Presence

- ❖ Technologies that enable co-located groups to collaborate more effectively
  - ❖ when working, learning and socializing
  - ❖ Examples: Smartboards, Surfaces, Wii and Kinect

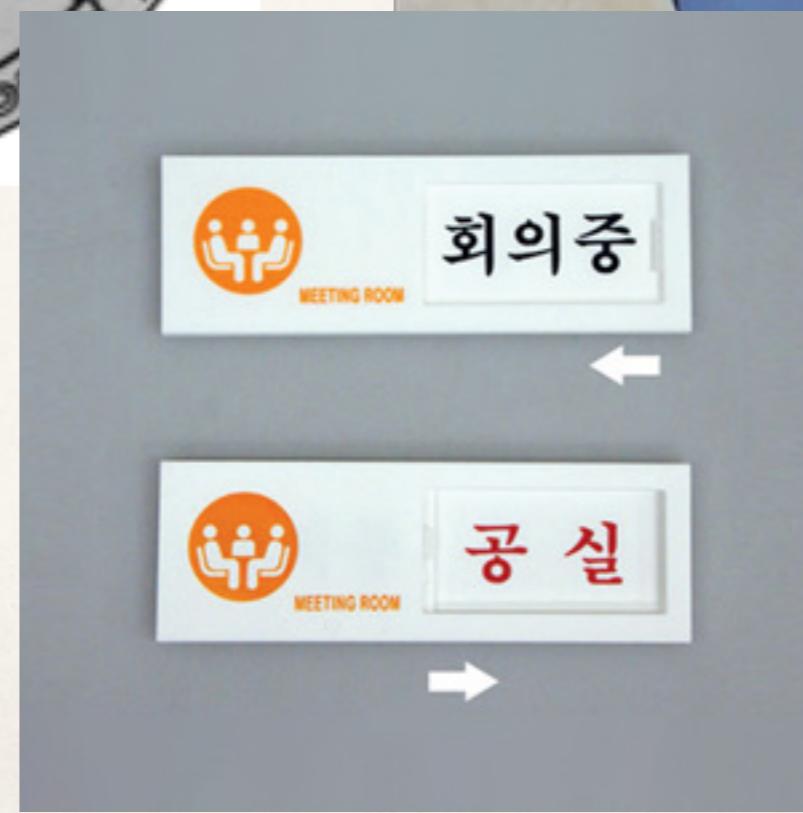
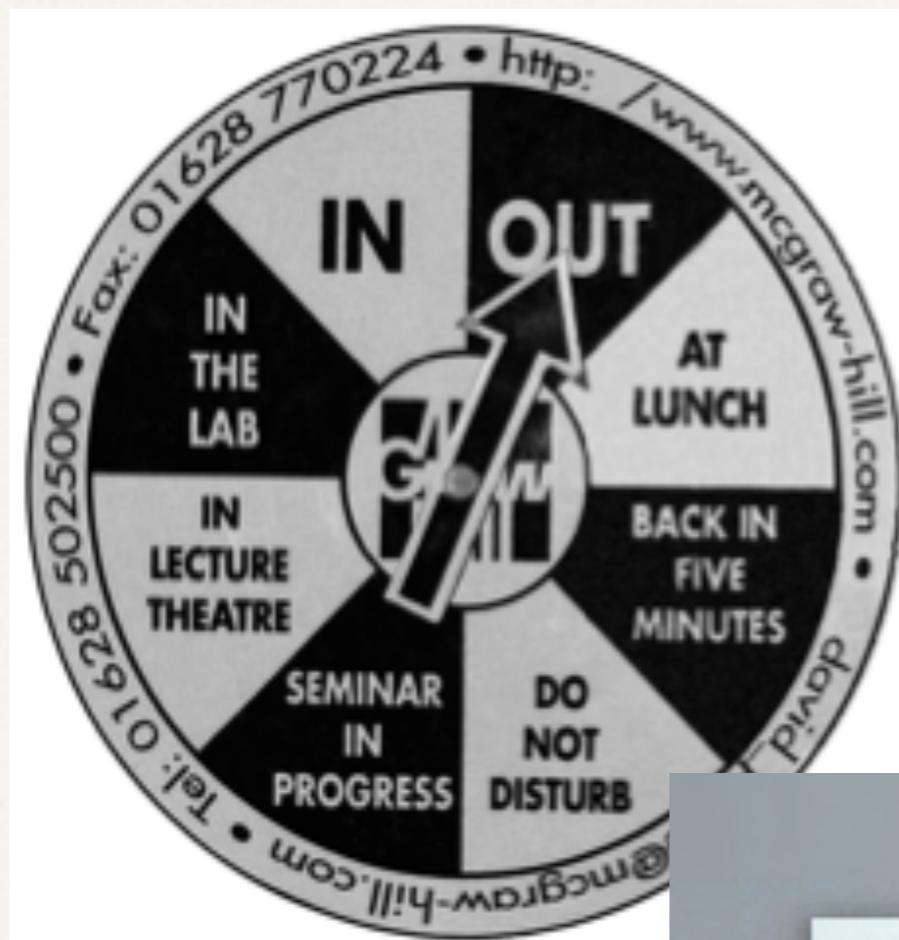
# F2F Coordinating Mechanisms

- ❖ Talk is central
- ❖ Non-verbal also used to emphasize and as substitute
  - ❖ e.g. nods, shakes, winks, glances, gestures and hand-raising
- ❖ Formal meetings
  - ❖ explicit structures such as agendas, memos, and minutes are employed to coordinate the activity

# Awareness Mechanisms

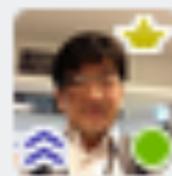
- ❖ Involves knowing who is around, what is happening, and who is talking with whom
- ❖ Peripheral awareness
  - ❖ keeping an eye on things happening in the periphery of vision
  - ❖ Overhearing and overseeing - allows tracking of what others are doing without explicit cues

# Lo-tech Awareness Mechanism



# Hi-tech Awareness Mechanism

## Members



JO

SJ

창오

B

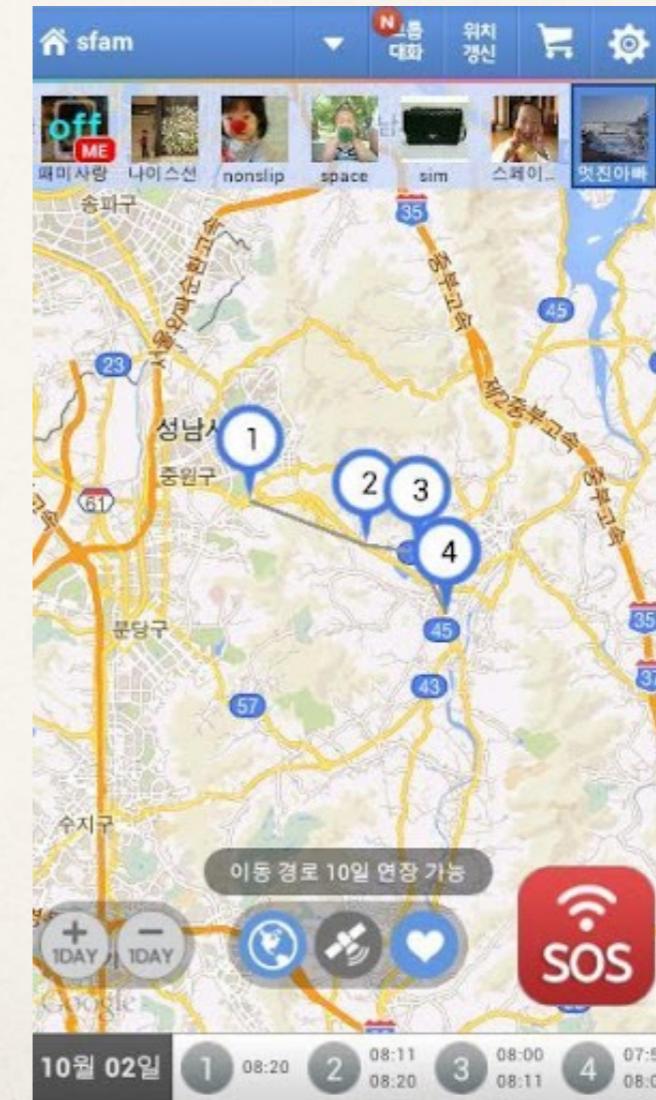
K

Trello

A screenshot of a Facebook group members list. The list includes the following members:

- Henry Kim (Web)
- Jessica Johnson (Mobile)
- Mary Wang (Mobile)
- David Young (Mobile)
- Emily Lee (Mobile)
- John Doe (Mobile)
- Sarah Lee (Mobile)
- Michael Chen (Mobile)
- Laura Kim (Web)

Facebook



Famy

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# Designing technologies to support awareness

- ❖ Provide awareness of others who are in different locations
- ❖ Workspace awareness: “the up-to-the-moment understanding of another person’s interaction with the shared workspace” (Gutwin and Greenberg, 2002)

# Shareable Interfaces: Reactable



reactable

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# Notification Systems

- ❖ Users notify others as opposed to being constantly monitored
- ❖ Provide information about shared objects and progress of collaborative tasks

# Sococo



Figure 4.15 Sococo floor plan of a virtual office, showing who is where and who is meeting with whom <https://www.sococo.com/>

Source: Courtesy of Leeann Brumby.

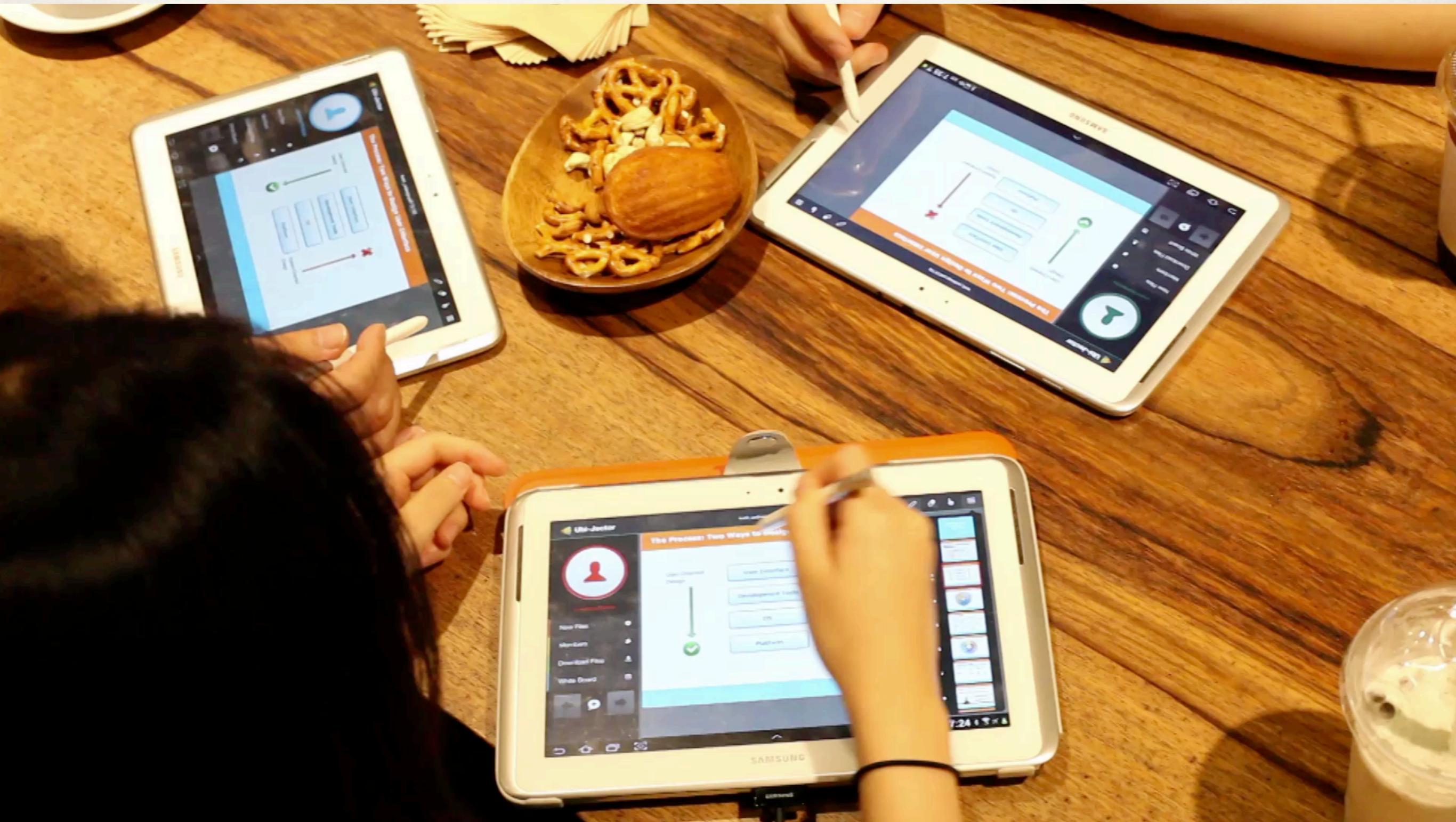
# Ubi-Jector

Hajin Lim, Hyunjin Ahn, Junwoo Kang, Bongwon Suh, Joonhwan Lee, **MobileHCI 2014**



# Ubi-Jector

Hajin Lim, Hyunjin Ahn, Junwoo Kang, Bongwon Suh, Joonhwan Lee, **MobileHCI 2014**



# Emotional Interaction

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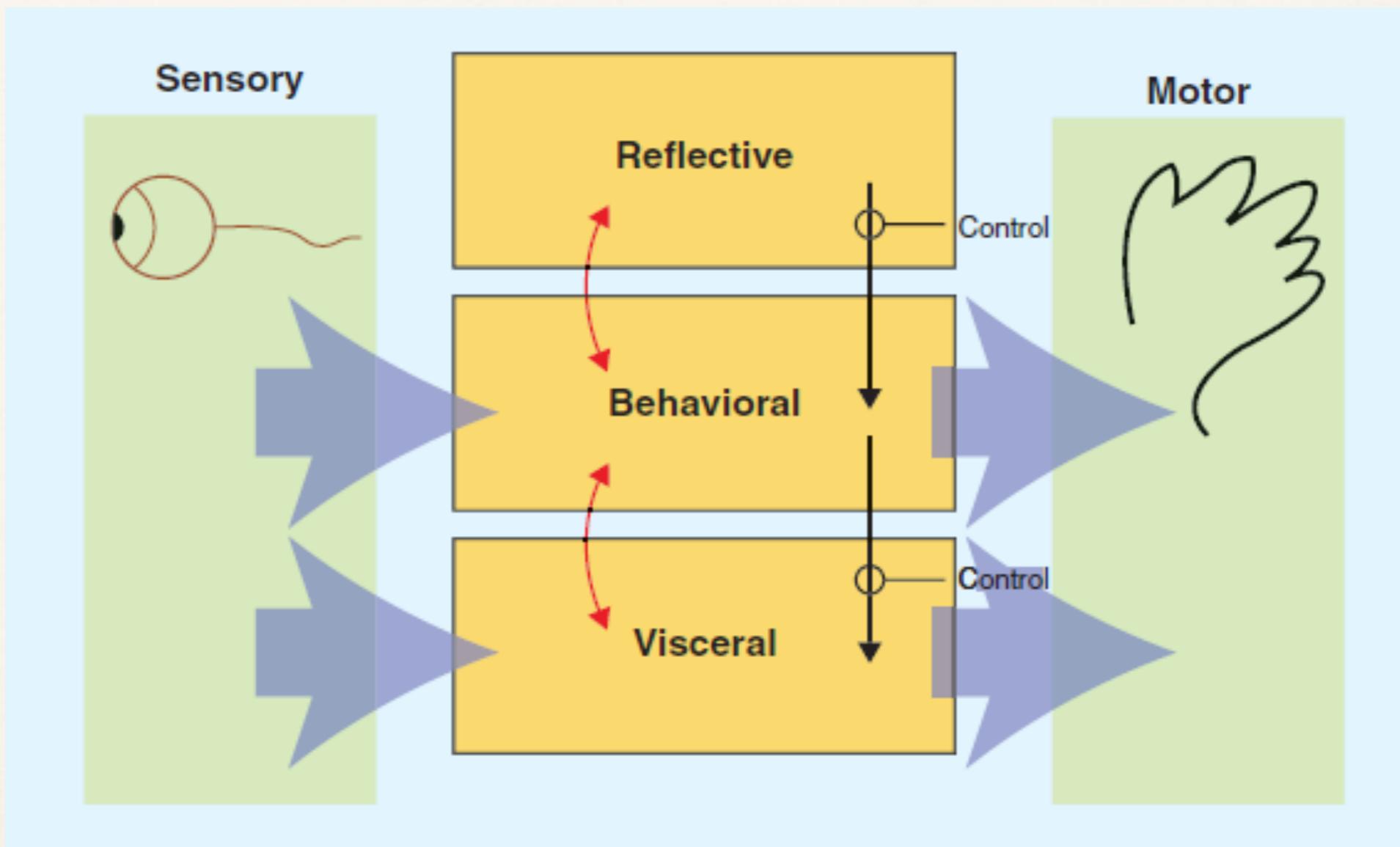
# Emotions and the User Experience

- ❖ HCI has traditionally been about designing efficient and effective systems
- ❖ Now more about how to design interactive systems that make people respond in certain ways
  - ❖ e.g. to be happy, to be trusting, to learn, to be motivated
- ❖ Emotional interaction is concerned with how we feel and react when interacting with technologies

# Emotional Interaction

- ❖ What makes us happy, sad, annoyed, anxious, frustrated, motivated, delirious and so on
- ❖ Why people become emotionally attached to certain products (e.g. virtual pets)
- ❖ Can social robots help reduce loneliness and improve wellbeing?
- ❖ How to change human behavior through the use of emotive feedback

# Emotional Design Model



Norman, Ortony and Revelle (2004) model of emotion

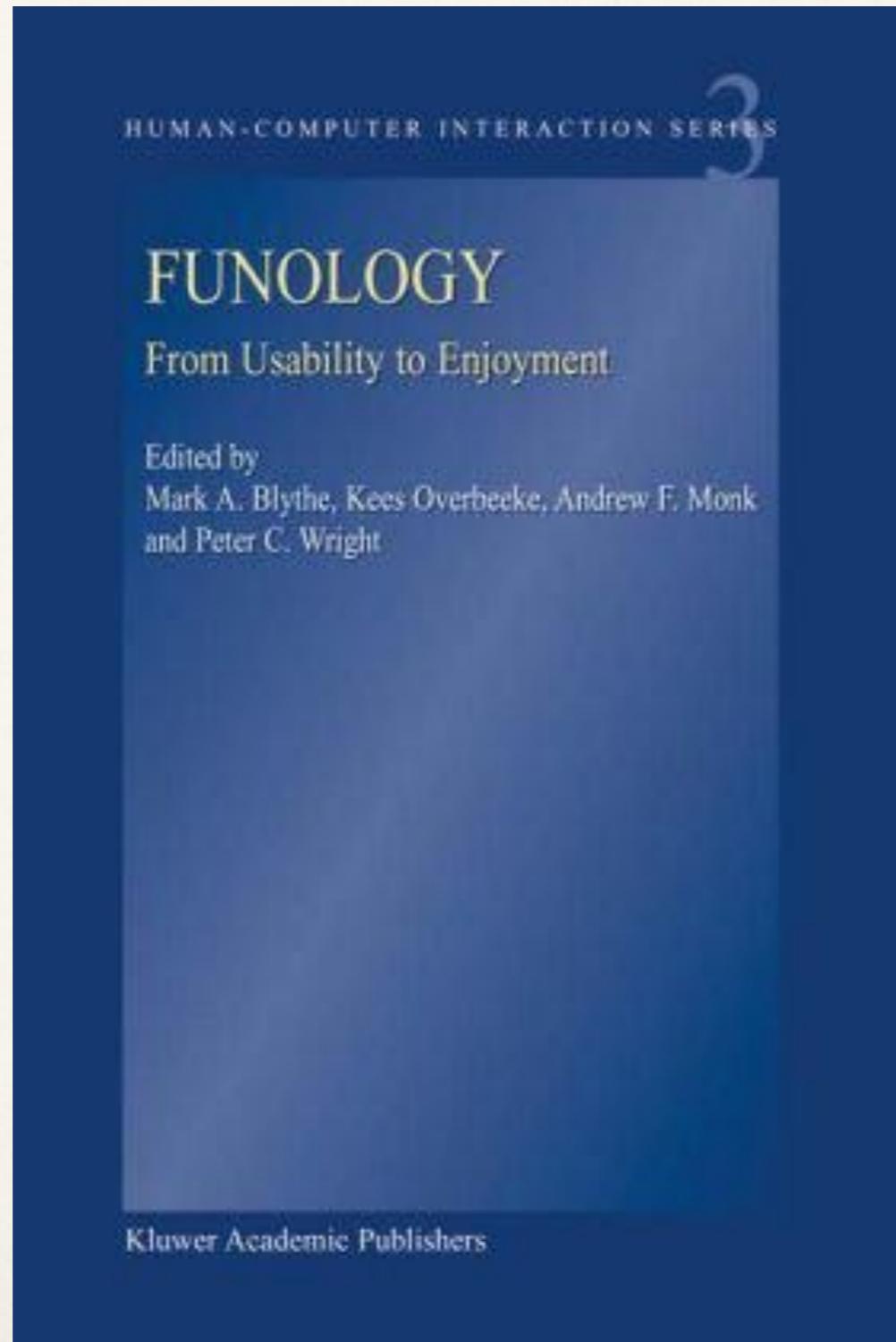
# Emotional Design Model

- ❖ Our emotional state changes how we think
  - ❖ when frightened or angry we focus narrowly and body responds by tensing muscles and sweating
    - ❖ more likely to be less tolerant
  - ❖ when happy we are less focused and the body relaxes
    - ❖ more likely to overlook minor problems and be more creative

# Expressive Interfaces

- ❖ Provide reassuring feedback that can be both informative and fun
- ❖ But can also be intrusive, causing people to get annoyed and even angry
- ❖ Color, icons, sounds, graphical elements and animations are used to make the ‘look and feel’ of an interface appealing
  - ❖ conveys an emotional state
- ❖ In turn this can affect the usability of an interface
  - ❖ people are prepared to put up with certain aspects of an interface (e.g. slow download rate) if the end result is appealing and aesthetic

# Funology



- Let's Make Things Engaging
- The Thing and I: Understanding the Relationship Between User and Product
- Making Sense of Experience
- Enjoyment: Lessons from Karasek
- The Semantics of Fun: Differentiating Enjoyable Experiences
- Measuring Emotion: Development and Application of an Instrument to Measure Emotional Responses to Products
- Designing for Fun: User-Testing Case Studies
- The Interactive Installation ISH: In Search of Resonant Human Product Interaction
- Fun with Your Alarm Clock: Designing for Engaging Experiences Through Emotionally Rich Interaction

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# Emoticon and Kinetic Typography

- ❖ Text-based communication has a long history, but until recently, has remained a static form.
- ❖ Email, IM and SMS on mobile devices are emerging forms of text-based communication encountered recently.
- ❖ However, its form does not support expressing emotion in general.

# Emoticon and Kinetic Typography

19-Sep-82 11:44      Scott E Fahlman      :-)

From: Scott E Fahlman <Fahlman at Cmu-20c>

I propose that the following character sequence for joke markers:

:-)

Read it sideways. Actually, it is probably more economical to mark things that are NOT jokes, given current trends. For this, use

:- (

<http://www.cs.cmu.edu/smiley/>

# Emoticon and Kinetic Typography



emoticons

# Emoticon and Kinetic Typography



sticker

# Emoticon and Kinetic Typography

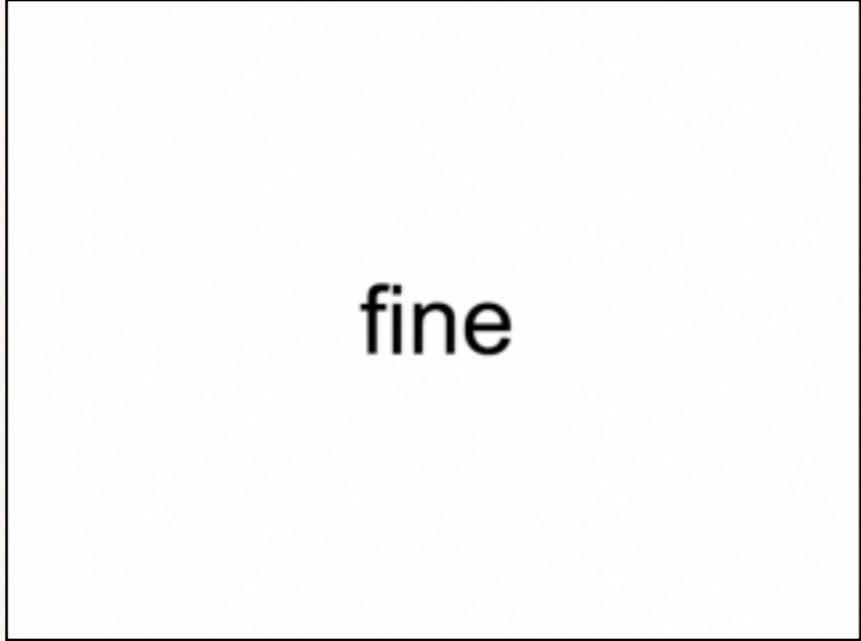
- ❖ Limitations with Emoticon (Lee et al., 2006)
  - ❖ Pre-defined emotions are too standardized to count individual differences
  - ❖ Lack in delivering emotions in depth
    - ❖ ^^ vs. ^^^^^^^^^^
- ❖ Kinetic typography is an alternative solution to convey emotion in text-based communication.
- ❖ Kinetic Typography is defined as **text that changes in color, size, or position over time**  
(Lee et al., 2006)

# Kinetic Typography

The Little Boy  
And  
The Old Man

By Shel Silverstein

# Kinetic Typography



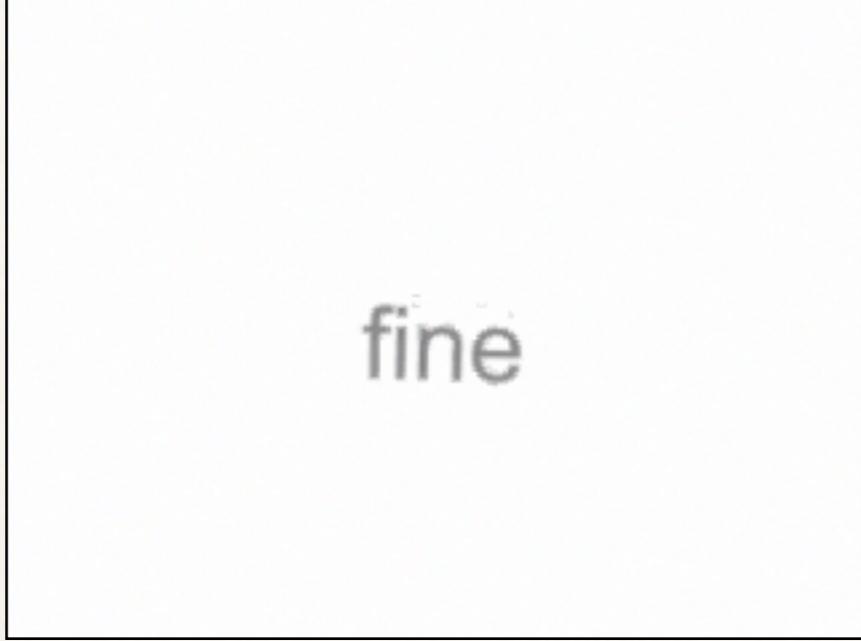
fine

angry



fine

happy



fine

sad



fine

joyous

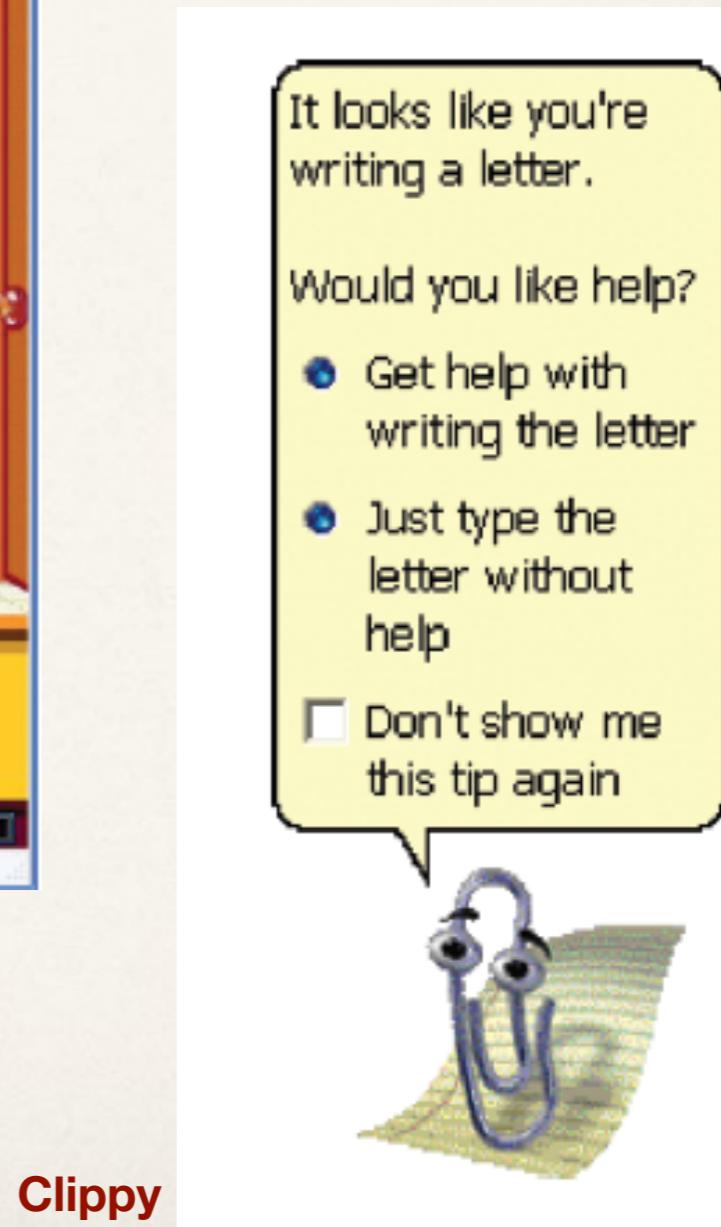
# Friendly Interfaces

- ❖ Microsoft pioneered friendly interfaces for technophobes - ‘At home with Bob’ software
- ❖ 3D metaphors based on familiar places (e.g. living rooms)
- ❖ Agents in the guise of pets (e.g. bunny, dog) were included to talk to the user
  - ❖ Make users feel more at ease and comfortable

# Bob & Clippy



Bob



Clippy

It looks like you're writing a letter.

Would you like help?

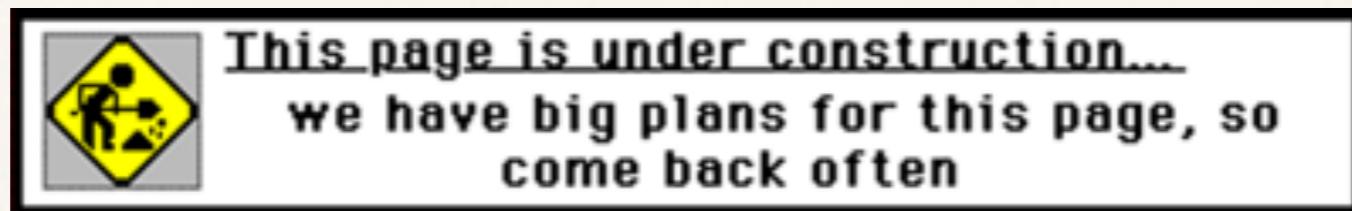
- Get help with writing the letter
- Just type the letter without help
- Don't show me this tip again

# Frustrating Interfaces

- ❖ Many causes:
  - ❖ When an application doesn't work properly or crashes
  - ❖ When a system doesn't do what the user wants it to do
  - ❖ When a user's expectations are not met
  - ❖ When a system does not provide sufficient information to enable the user to know what to do
  - ❖ When error messages pop up that are vague, obtuse or condemning
  - ❖ When the appearance of an interface is garish, noisy, gimmicky or patronizing

# Make Interface Friendly

- ♦ Amusing to the designer but not the user



# Error Messages

- ♦ “The application Word Wonder has unexpectedly quit due to a type 2 error.”
- ♦ Shneiderman’s guidelines for error messages include:
  - ♦ avoid using terms like FATAL, INVALID, BAD
  - ♦ Audio warnings
  - ♦ Avoid UPPERCASE and long code numbers
  - ♦ Messages should be precise rather than vague
  - ♦ Provide context-sensitive help

# Website Error

Error!

**Your login information is incorrect...**

Please verify that you typed in your Last Name, NSF ID, and Password correctly. If you still cannot login, please contact the Administrator regarding your access rights.

[Return To Previous Page](#)

**Error 404 – Web Page Not Found**

# Designs for 404 Error

 Home About Services Our Work Doodles Contact Blog

Ahhhhhhhhh! This page doesn't exist

Not to worry. You can either head back to [our homepage](#), or sit there and listen to a goat scream like a human.



<http://www.creativebloq.com/web-design/best-404-pages-812505>

# Designs for 404 Error



<http://www.creativebloq.com/web-design/best-404-pages-812505>

# Designs for 404 Error



<http://www.creativebloq.com/web-design/best-404-pages-812505>

# Should computers say they're sorry?

- ❖ Reeves and Nass (1996) argue that computers should be made to apologize
- ❖ Should emulate human etiquette
- ❖ Would users be as forgiving of computers saying sorry as people are of each other when saying sorry?
- ❖ How sincere would they think the computer was being? For example, after a system crash:
  - ❖ “I’m really sorry I crashed. I’ll try not to do it again”
  - ❖ How else should computers communicate with users?

# Conversational Agent



# Issues of Conversational Agent



# Computers Are Social Actors

- ♦ Media (computer) = real (actual person)
- ♦ CASA framework
  - ♦ Computers are Social Actors (Reeves & Nass, 1996)
  - ♦ Even when the ‘non-humanness’ tendency of the system itself is emphasized, such as Text-to-Speech (TTS), people apply social cues to media (Nass & Lee, 2000)
  - ♦ Social response: The way people treat media is fundamentally the same as the way they deal with real people or things

# Computers Are Social Actors

- ♦ Therefore, in general, **interaction with agents** such as human-computer or human-robot is also **based on interpersonal communication.**
    - ♦ Personality & Relationship  
(Nass, Moon, Fogg, Reeves & Dryer, 1995)
    - ♦ Humor & Apology (Reeves & Nass, 1996)
- Anthropomorphism

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## Current Technology



*“I'm looking for something on May 3rd.”*



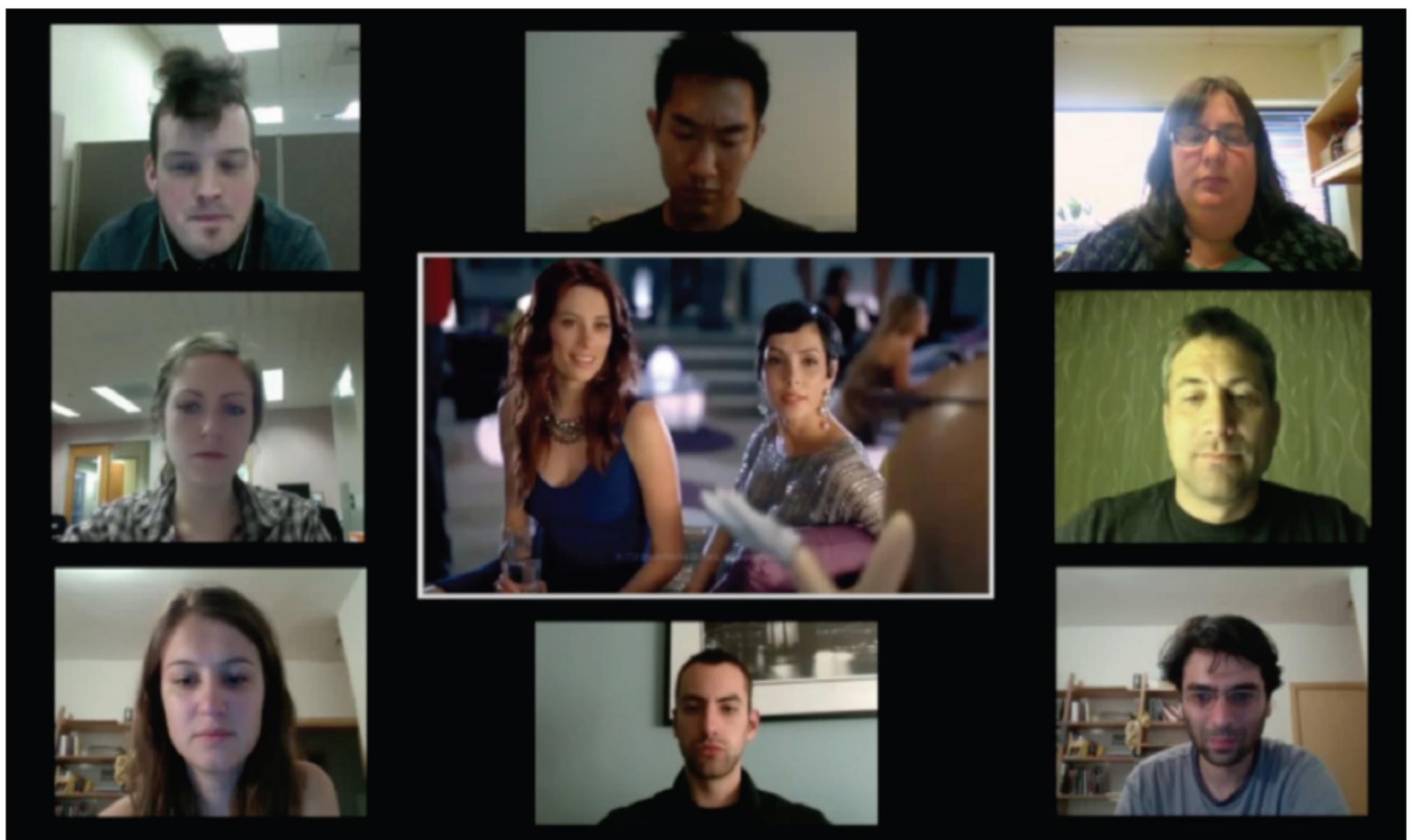
# Detecting Emotions

- ❖ Sensing technologies used to measure GSR, facial expressions, gestures, body movement
- ❖ Aim is to predict user's emotions and aspects of their behavior
  - ❖ e.g. what is someone most likely to buy online when feeling sad, bored or happy

# Facial Coding

- ❖ Measures a user's emotions as they interact with a computer or tablet
- ❖ Analyses images captured by a webcam of their face
- ❖ Uses this to gauge how engaged the user is when looking at movies, online shopping sites and ads
- ❖ 6 core expressions - sadness, happiness, disgust, fear, surprise and anger (Ekman, 1972)

# Facial Coding



**Figure 5.9** A screen shot showing facial coding from Affdex software  
Source: Courtesy of Affectiva, Inc.

# Facial Coding

- ♦ If user screws up their face when an ad pops up  
→ feel disgust (coding rule)
- ♦ If start smiling → they are feeling happy
- ♦ Website can adapt its ad, movie storyline or content to match user's emotional state
- ♦ Eye-tracking, finger pulse, speech and words/phrases also analysed when tweeting or posting to Facebook

# Emotion Recognition using Deep Learning



A large image of a smiling couple hugging, used as input for emotion recognition.

Upload Image URL Go

Results Response JSON



happiness: 99.998%

neutral: 0%

surprise: 0%

sadness: 0%

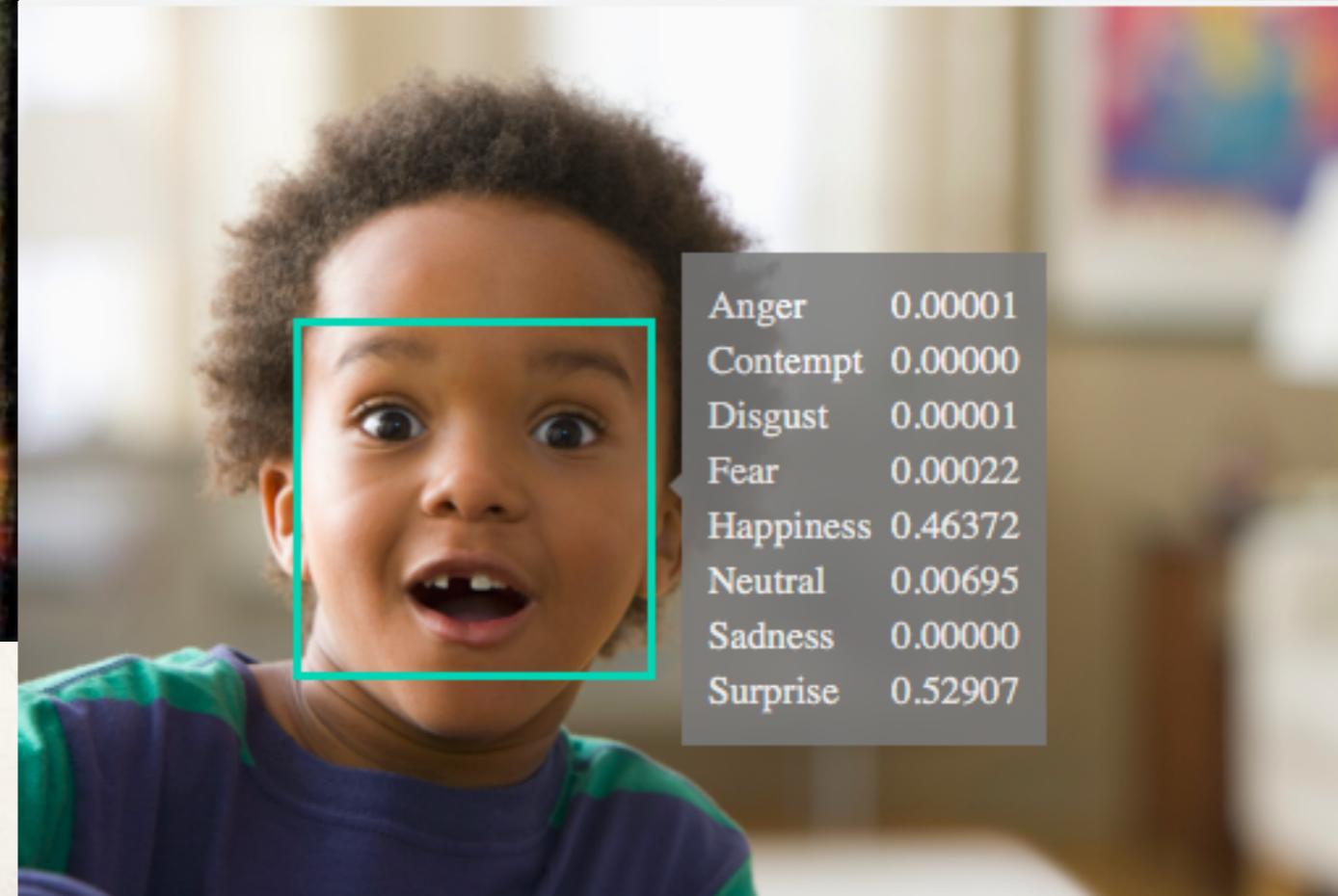
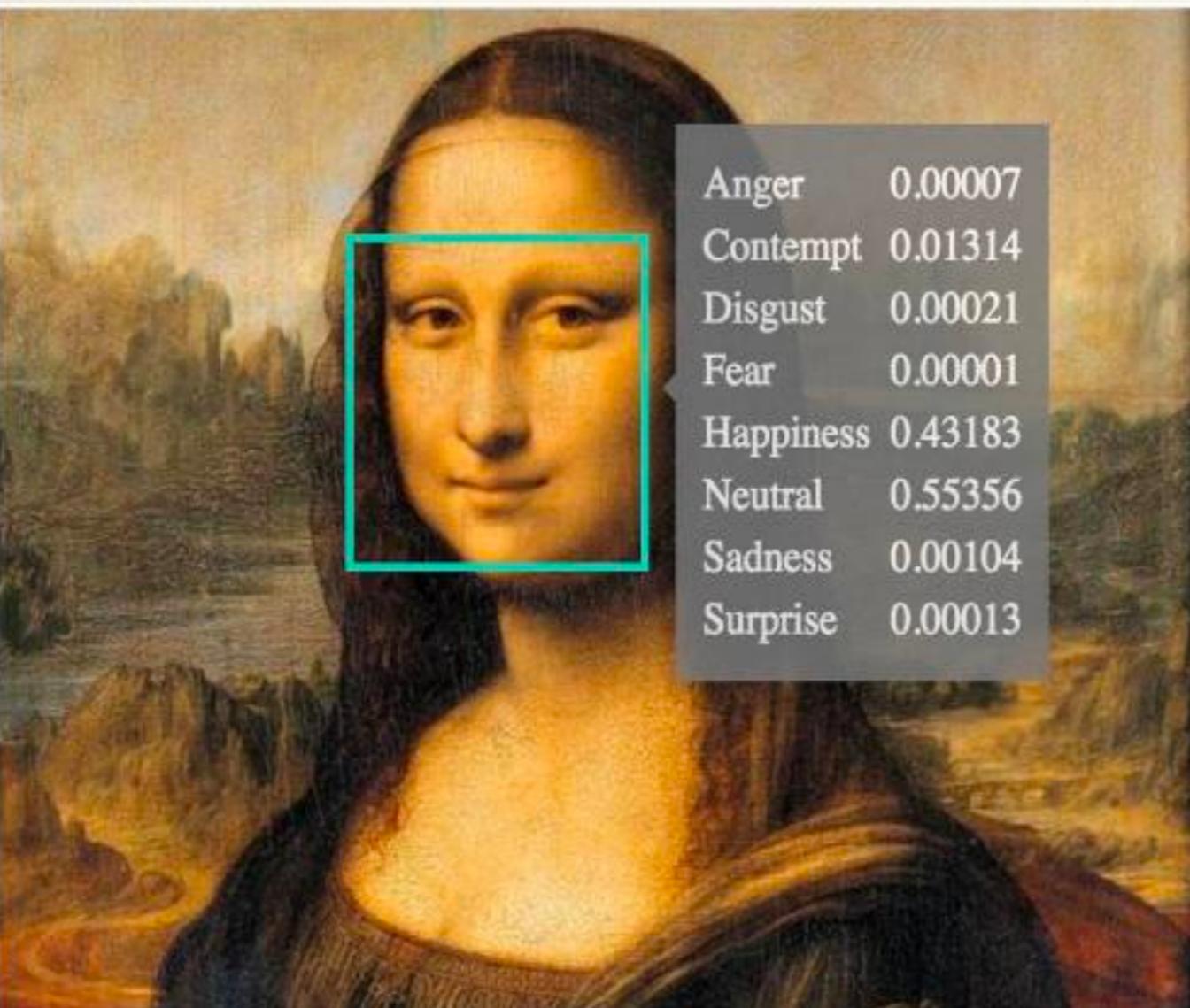
disgust: 0%

anger: 0%

fear: 0.002%

Emotion of this detected face is most likely to be **happiness**, with the highest possibility of 99.998%

# Emotion Recognition using Deep Learning



# Persuasive Technologies and Behavioral Change

- ❖ Interactive computing systems deliberately designed to change people's attitudes and behaviors (Fogg, 2003)
- ❖ A diversity of techniques now used to change what they do or think
  - ❖ Pop-up ads, warning messages, reminders, prompts, personalized messages, recommendations, Amazon 1-click
  - ❖ Commonly referred to as nudging

# Tracking Devices and Persuasive Tech

- ❖ Mobile apps designed to help people monitor and change their behaviour (e.g. fitness, sleeping, weight)
- ❖ Can compare with online leader boards and charts, to show how they have done in relation to their peers and friends → using gamification
- ❖ Also apps that encourage reflection that in turn increase well-being and happiness

# Persuasive Technology Example



(a)



(b)

**Figure 5.12** (a) The Power Aware Cord consists of an electrical power strip in which the cord is designed to visualize the energy rather than hiding it. Increase and decrease in use is conveyed through showing glowing pulses, flow, and intensity of light. (b) The Waatson (now a commercial product available in many countries) measures in watts or cost how much electricity someone is using in their home at any moment. This is conveyed in LEDs on the top side. On the underside are colored lights: when they glow blue it shows you are using less than normal; when it changes to purple it indicates that your usage is average; and when it is red it indicates you are using more than normal

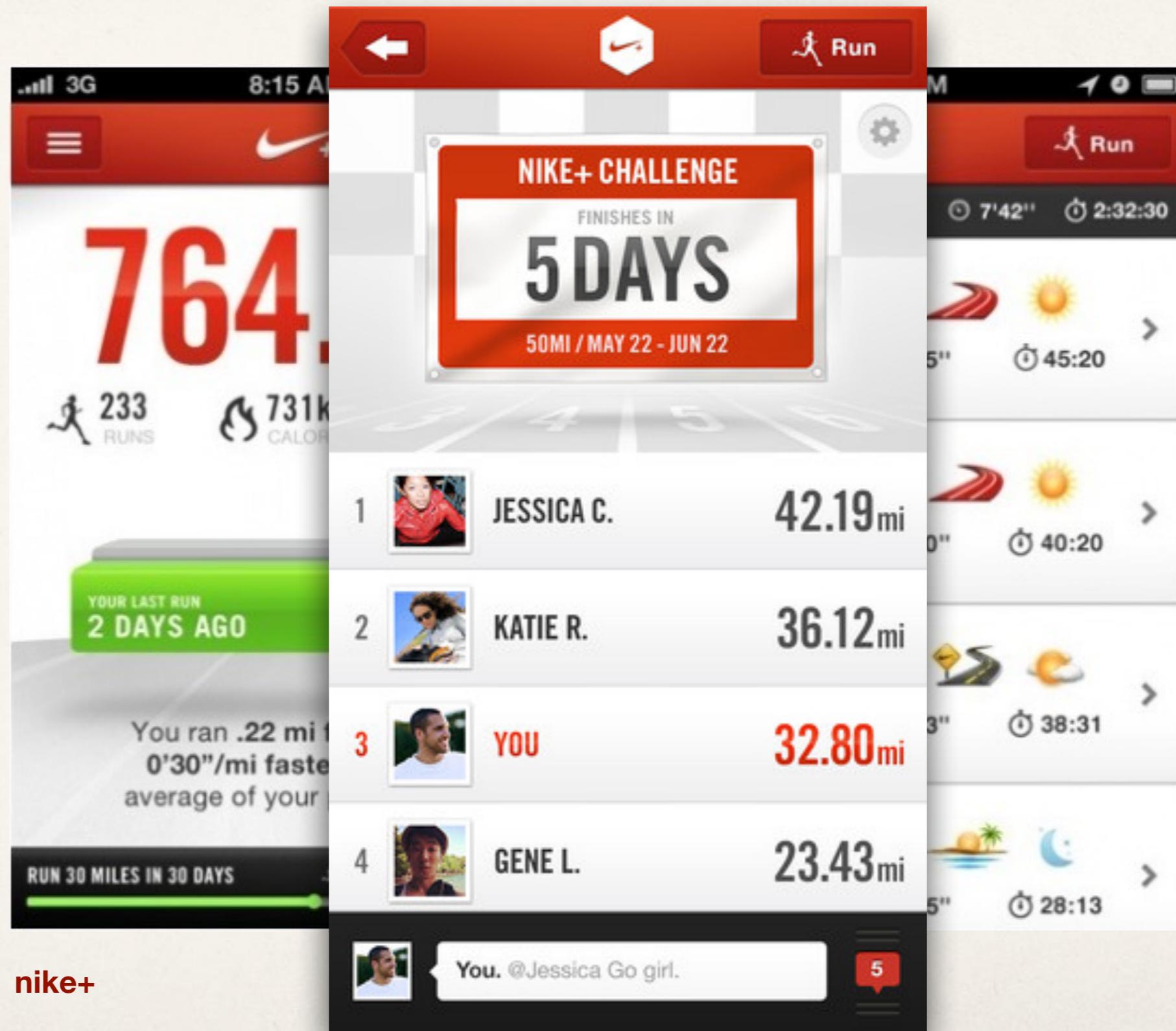
Source: (a) Photo taken from the Interactive Institute's research program "Static!" and reproduced with permission. (b) Reproduced with permission from DIY Kyoto Ltd. [www.diykyoto.com](http://www.diykyoto.com).

# Persuasive Technology Example



nike+

# Persuasive Technology Example



# Persuasive Technology Example

## Dash / Automatic etc. (OBD II)

Your driving style is represented by the Dash score.

See driving statistics over time giving you insights into savings and improvement.

With a check engine light alert, we'll tell you the severity, cost and who can fix it.

Carrier 3:21 PM dash

54

672 miles

Carrier 3:05 PM Trends

Your Driving Trends

117.5 | 77.1

Monthly avg. miles ▲ Change

Score Efficiency Distance

< July 2014

miles

240 -  
180 -  
120 -  
60 -  
0 -

Week 1 Week 2 Week 3 Week 4

Carrier 3:06 PM

Fuel component failure

Critical Issue

Engine will continue to overheat and driving further is dangerous.

\$240 - \$280

Parts: \$60-\$80 Labor: \$180-\$200

Turn Off Light Light Cleared by Mechanic

List View Map View

# Persuasive Technology Example

[mint.com \(personal finance management\)](#)

The screenshot shows the mint.com dashboard with a green header and various sections for managing financial accounts, alerts, budgets, and ways to save.

**OVERVIEW**

**YOUR ACCOUNTS**

		Update	Edit
Total Cash	\$21,092		
E'trade Bank E'trade Savings	\$21,092		
Total Debt	(\$13,454)		
Credit Available	\$10,456 / \$23,500		
American Express Blue Cash	\$2,258		
American Express Rewards Plus Gold	\$0.00		
Chase Credit Cards... Amazon.com	\$258		
Chase Credit Cards... Freedom	\$10,938		

**YOUR ALERTS**

- This month, you spent \$208 on Auto. This exceeds your budget of \$100 by \$108. OCT 29
- This month, you spent \$14 on Entertainment. This exceeds your budget of \$5.00 by \$9.00. OCT 29
- In the past 30 days, you spent \$549 on Shopping. Usually you only spend \$322. OCT 29

**YOUR BUDGET**

OCTOBER 2007 100% BUDGET OVER?

Shopping	\$322	\$228	
Restaurants	\$213	\$319	
Gas / Fuel	\$159	\$157	
Groceries	\$34	\$56	
Entertainment	\$5.00	\$9.35	OCT 29
Auto	\$100	\$109	OCT 29

Mint has created a few budgets based on your average spending. Edit or add more budgets as you please.

**YOUR FINANCIAL HEALTH**

**Cash vs Debt** \$7,637

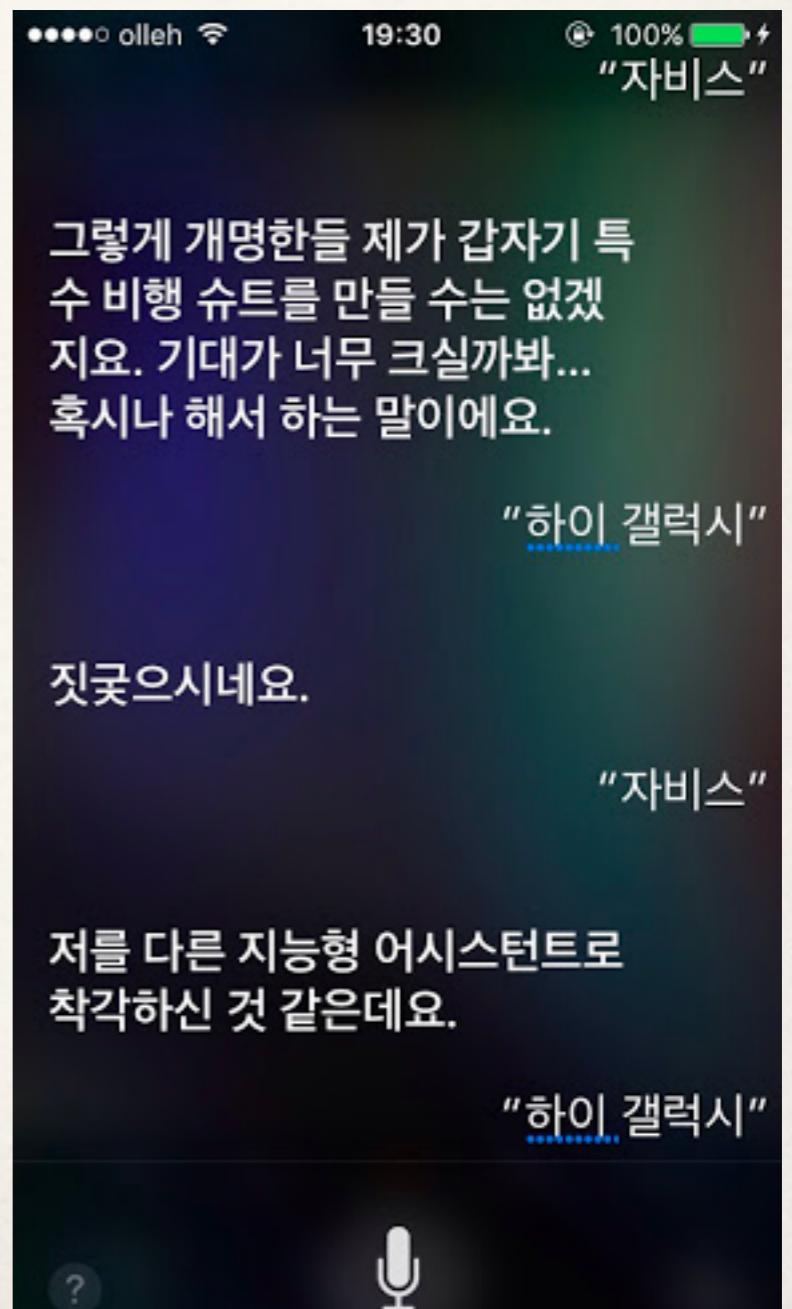
**YOUR WAYS TO SAVE**

all offers \$4,844 FOUND	checking NO OFFERS	savings \$1,067 FOUND	credit cards \$2,492 FOUND	monthly bills \$1,295 FOUND
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**OVERVIEW · TRANSACTIONS · SPENDING TRENDS · WAYS TO SAVE · ADD ACCOUNTS**  
**SUPPORT FORUMS · ABOUT US · HOW WE KEEP YOU SAFE · PRIVACY & SECURITY · TERMS OF USE**  
©2007 Mint Software, Inc. | Build ph322.15

# Anthropomorphism

- ❖ Attributing human-like qualities to inanimate objects (e.g. cars, computers)
- ❖ Well known phenomenon in advertising
  - ❖ Dancing butter, drinks, breakfast cereals
- ❖ Much exploited in HCI
  - ❖ Make user experience more enjoyable, more motivating, make people feel at ease, reduce anxiety (e.g. Siri)



# Evidence to Support Anthropomorphism

- ❖ Reeves and Nass (1996) found that computers that flatter and praise users in education software programs → positive impact on them
  - ❖ “Your question makes an important and useful distinction. Great job!”
- ❖ Students were more willing to continue with exercises with this kind of feedback

# Making Pleasurable Interfaces

- ❖ Welcome message
  - ❖ “Hello Chris! Nice to see you again. Welcome back.  
Now what were we doing last time? Oh yes, exercise 5.  
Let’s start again.”
  - ❖ “User 24, commence exercise 5.”
- ❖ Feedback when get something wrong
  - ❖ “Now Chris, that’s not right. You can do better than  
that. Try again.”
  - ❖ “Incorrect. Try again.”

# Criticism of Anthropomorphism

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- ❖ Deceptive, make people feel anxious, inferior or stupid
- ❖ People tend not to like screen characters that wave their fingers at the user and say:
  - ❖ Now Chris, that's not right. You can do better than that. Try again.”
- ❖ Many prefer the more impersonal:
  - ❖ “Incorrect. Try again.”
- ❖ Studies have shown that personalized feedback is considered to be less honest and makes users feel less responsible for their actions (e.g. Quintanar, 1982)

# Virtual Characters

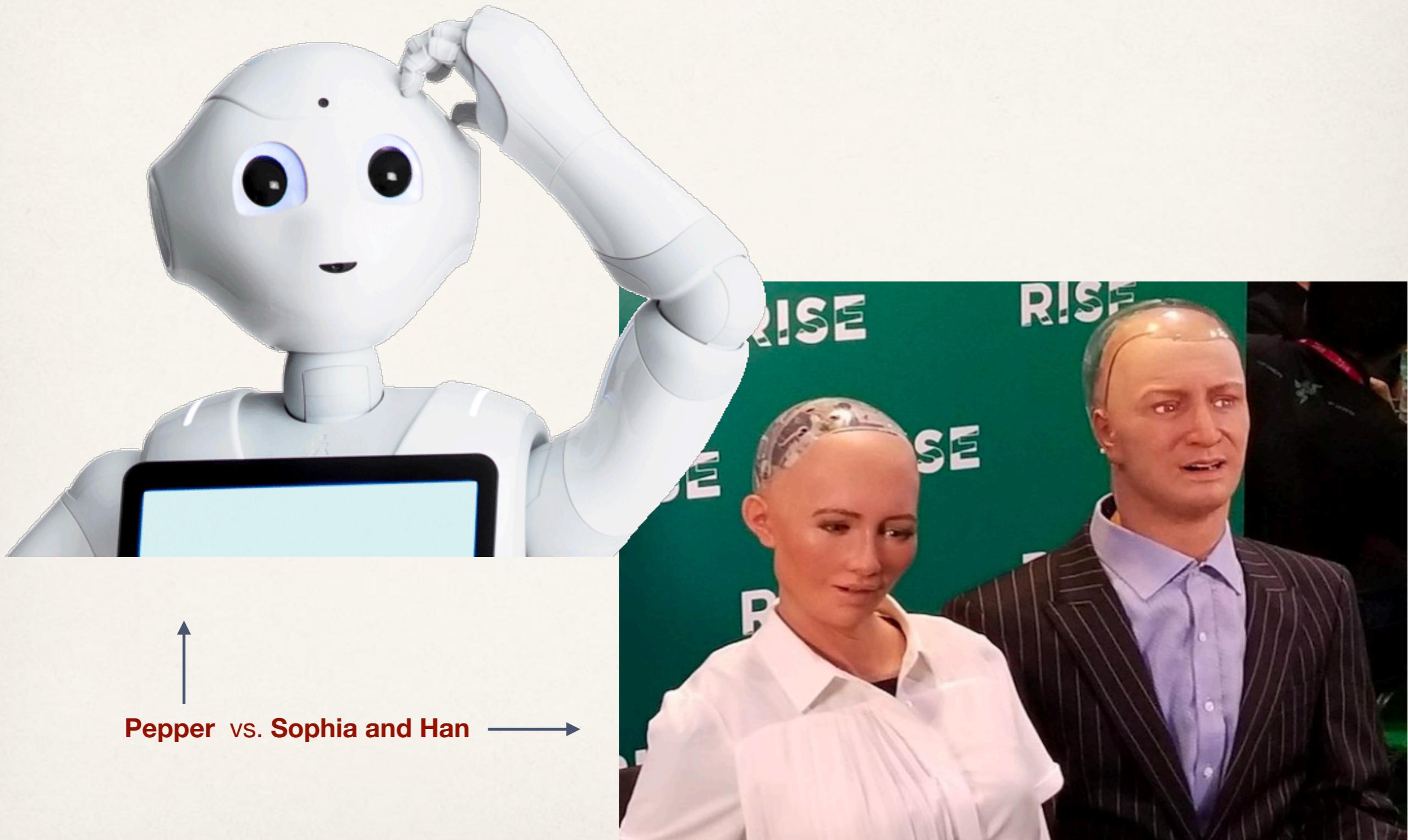
- ❖ Appearing on our screens in the form of:
  - ❖ Sales agents, characters in videogames, learning companions, wizards, pets, newsreaders
- ❖ Provides a persona that is welcoming, has personality and makes user feel involved with them



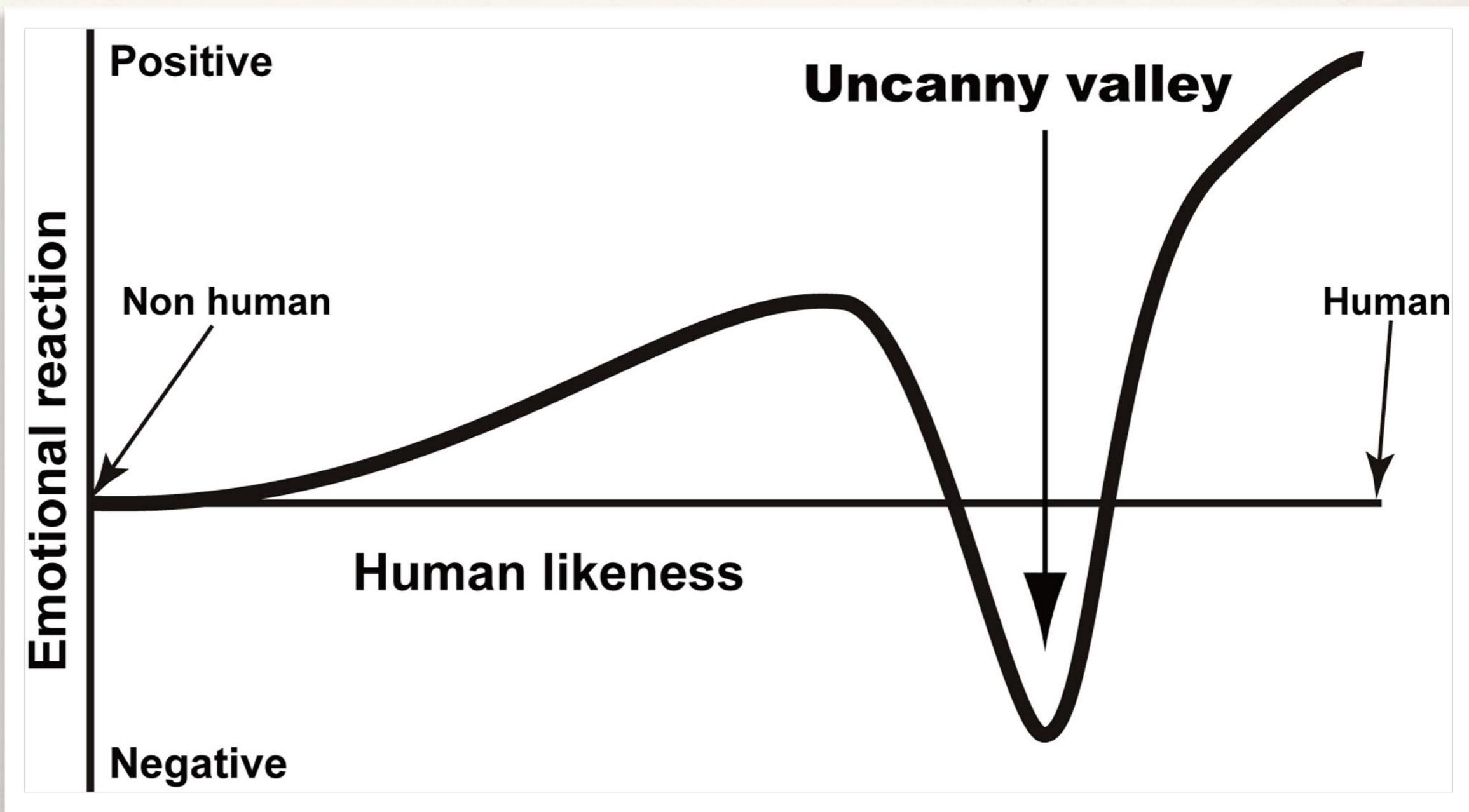
# Disadvantages of Virtual Characters

- ❖ Can lead people into false sense of belief, enticing them to confide personal secrets with chatterbots
- ❖ Annoying and frustrating
  - ❖ e.g. Clippy
- ❖ May not be trustworthy
  - ❖ virtual shop assistants?

# Uncanny Valley



# Uncanny Valley



# Discussion



- ♦ Is it possible?
- ♦ What we need to make this kind of system?

# Reading Assignment

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- Chapter 7: Data Gathering
- Chapter 8: Data Analysis, Interpretation and Presentation

# Questions...?

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