

# Design for emotions

## Lecture 5

Adapted by dr Kristina Lapin



# Overview

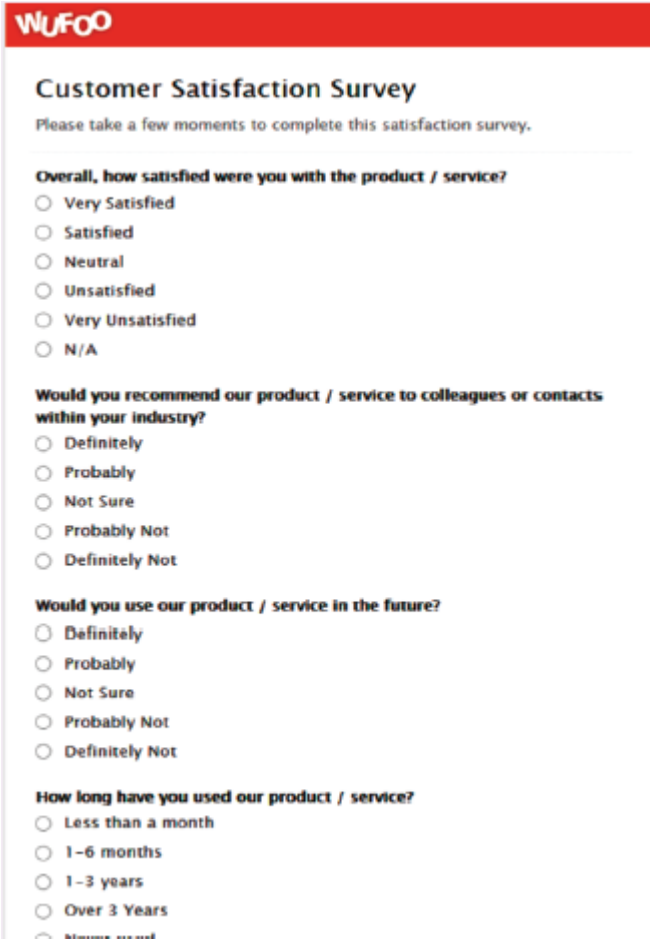


- Emotions and the user experience
- Expressive and annoying interface
  - how the ‘appearance’ of an interface can affect users
- Models of emotion
  - Ortony et al (2005)
- Automatic emotion recognition and emotional technologies
- Persuasive technologies and behavioral change
  - how technologies can be designed to change people’s attitudes and behavior
- Anthropomorphism
  - The pros and cons

# 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

# Is this form fun to fill in?



The image shows a screenshot of a WuFoo online survey form. The header is a red bar with the WuFoo logo. Below it, the title 'Customer Satisfaction Survey' is followed by a brief instruction: 'Please take a few moments to complete this satisfaction survey.' The form contains four sections, each with a question and a list of radio button options. The first section asks about overall satisfaction with the product/service, with options from 'Very Satisfied' to 'N/A'. The second section asks if the respondent would recommend the product/service to colleagues or contacts, with options from 'Definitely' to 'Definitely Not'. The third section asks if the respondent would use the product/service in the future, with the same set of options. The fourth section asks how long the respondent has used the product/service, with options from 'Less than a month' to 'More than 3 years'.

**WuFoo**

**Customer Satisfaction Survey**

Please take a few moments to complete this satisfaction survey.

**Overall, how satisfied were you with the product / service?**

☐ Very Satisfied

☐ Satisfied

☐ Neutral

☐ Unsatisfied

☐ Very Unsatisfied

☐ N/A

**Would you recommend our product / service to colleagues or contacts within your industry?**

☐ Definitely

☐ Probably

☐ Not Sure

☐ Probably Not

☐ Definitely Not

**Would you use our product / service in the future?**

☐ Definitely

☐ Probably

☐ Not Sure

☐ Probably Not

☐ Definitely Not

**How long have you used our product / service?**

☐ Less than a month

☐ 1-6 months

☐ 1-3 years

☐ Over 3 Years

☐ More than 3 years

- WuFoo aims to transform the tedious task filling online forms into being more fun
- Minimalism
- Balance
- Aesthetics

Figure 5.1 Examples of Wufoo's online forms

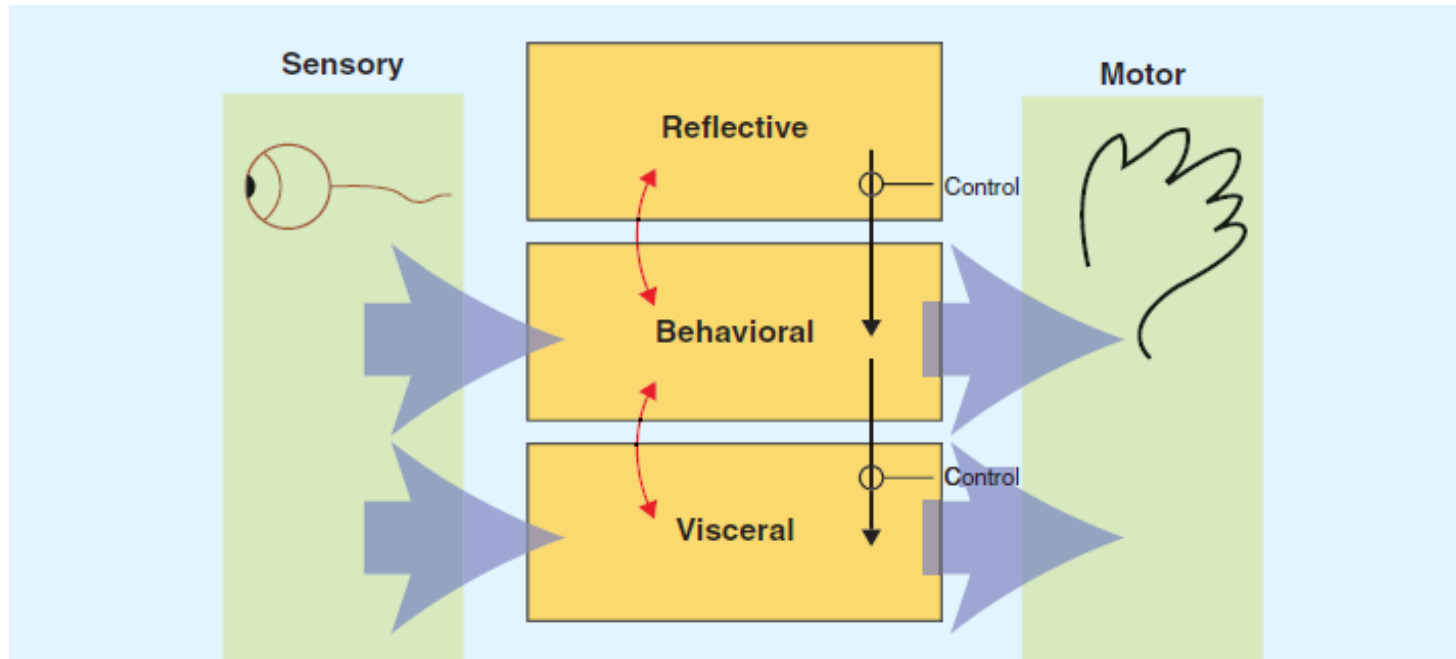
Source: Reproduced with permission from Wufoo.com. <http://wufoo.com/examples/#survey>.

# Emotional interaction

- What makes us happy, sad, annoyed, anxious, frustrated, motivated, delirious and so on
  - translating this into different aspects of the user experience
- 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



**Figure 5.2** Ortony *et al*'s (2005) model of emotional design showing three levels: visceral, behavioral, and reflective

Source: The illustration and text are from Figure 1.1 of Norman, D. A. (2004). *Emotional Design: We love (or hate) everyday things*. New York: Basic Books. Reprinted with permission of the author.

# Applying emotional design model

- Design for
  - visceral level
    - make product look, feel and sound good
  - behavioral level
    - ensure product usability
  - reflective level
    - take into account the meaning and personal value of a product in a particular culture



A Swatch  
watch called  
Dip in Color

# Claims from model

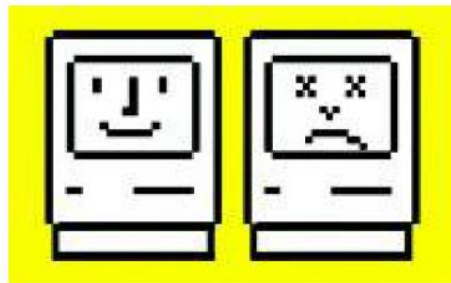
- Our emotional state changes how we think
  - when frightened or angry we focus narrowly and body responds by tensing muscles and sweating
    - more likely to be less tolerant
  - when happy we are less focused and the body relaxes
    - more likely to overlook minor problems
    - be more creative



# EXPRESSIVE INTERFACES

# Expressive forms

- Colors, emoticons, sounds, icons, virtual agents
  - convey emotional forms
  - elicit emotional responses in users



## Smiling and sad Apple icons for the classic Mac



# 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
- 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



# 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



# Conveying system status



- Dynamic icons
  - a recycle bin expanding when a file is placed
- Animations
  - a ball whirling to say the computer is busy
- Spoken messages
  - GPS navigation instructing politely where to go
- Sonifications indicating actions and events
  - Imitates sounds of closing window, dragging files
- Vibrotactile feedback
  - distinct smartphone buzzes

# Rich animations

- Loading animations
  - Simple, without sound



Connecting ...

# Rich animations



The Social App



- Navigation and menus (nonscrolling)
  - Hidden navigation menus
    - [Navigation drawers](#)

# Rich animations

- Hover animations
  - give a more intuitive feel to a site as users mouse over content
  - Example: [humaan.com](http://humaan.com)

WEB • APPS • ECOMMERCE

We craft experiences for the web, helping brands speak human in a *digital world*.





# Rich animations

- Galleries and slideshows
  - an effective way to showcase multiple images without overburdening the users
  - [Bornfighter](#)



# Rich animations

- Motion animation
  - Tool for drawing a user's attention

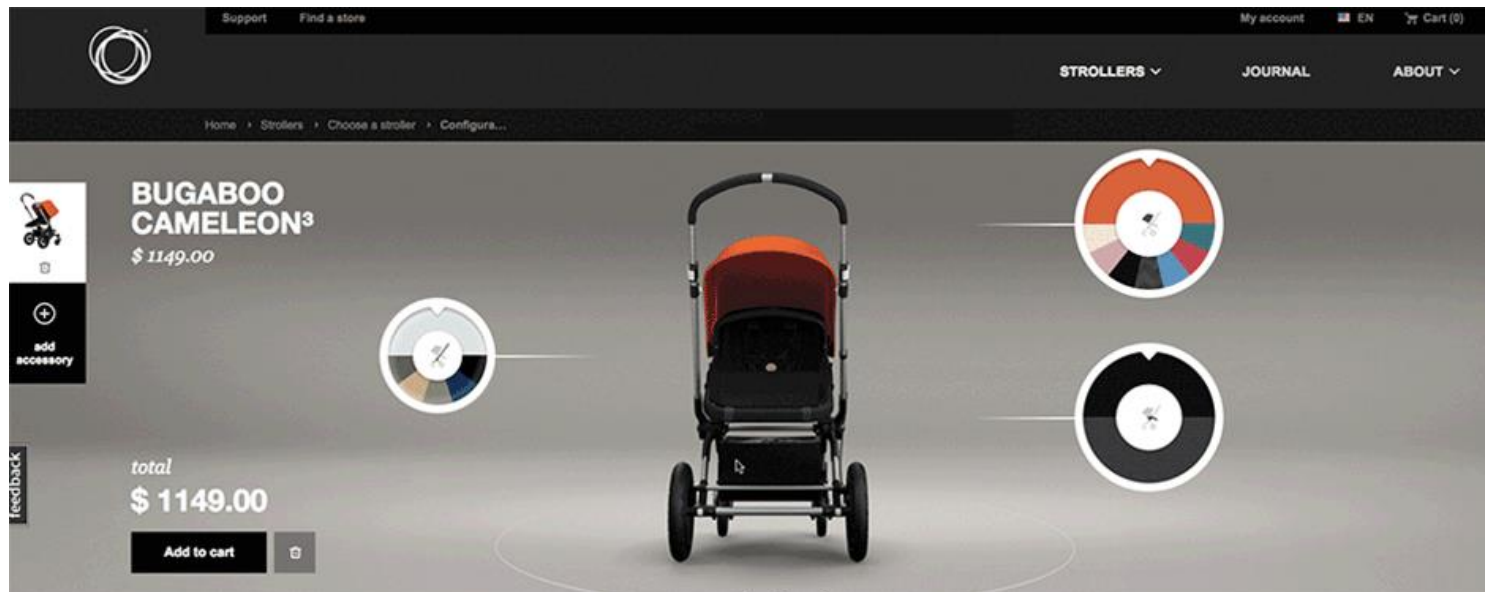
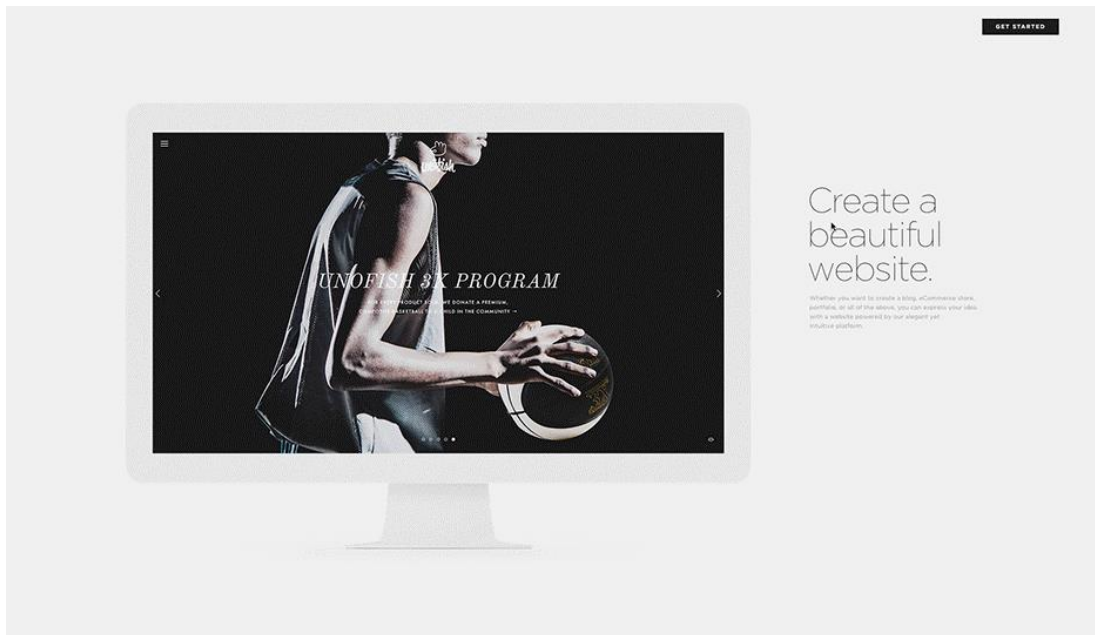


Photo credit: [Bugaboo](#) via [awwwards](#)

# Rich animations

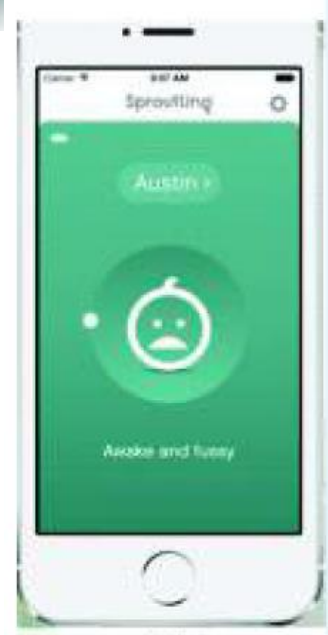
- Scrolling
  - gives further control to the user, who can determine the pace of how the animation unfolds
    - Example: [Squarespace](#)



# Rich animations

- Background animations/ videos
  - simple animated background can add visibility,
    - but should be used in moderation or it can be very distracting to the user.
    - The key is to work on individual sections or create a gentle movement of an entire image.
      - <https://www.dunckelfeld.de/en/>

# Home technology



- [The Nest](#) thermostat controls how house is heated or cooled
- [The Sproutling](#) - a band wrapped around a baby's ankle
  - Senses heart rate, skin temperature, motion, position
  - smartphone app lets parents know if their baby is sleeping soundly or if something is wrong

# ANNOYING INTERFACES

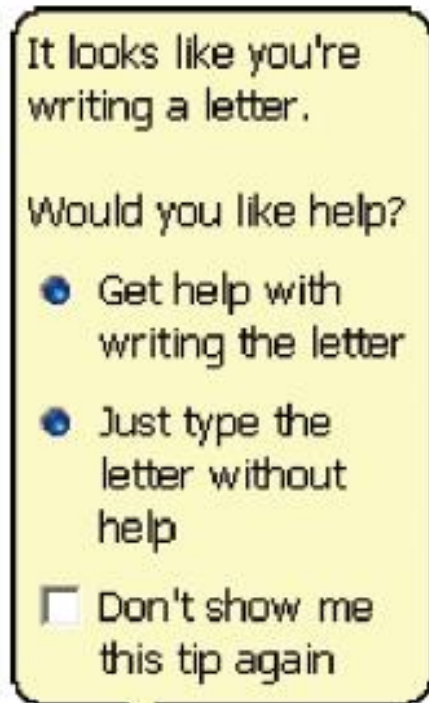
# Bob



**Figure 5.6** ‘At home with Bob’ software developed for Windows 95. Although now defunct, it has been resurrected affectionately to run on a Virtual PC platform

*Source:* Microsoft product screenshot reproduced with permission from Microsoft Corporation.

# Clippy



- Clippy was disliked by many
- Annoying, distracting, patronizing
- What sort of user liked Clippy?



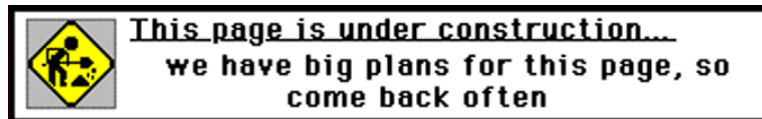
# Frustrating interfaces

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
- When a system requires users to carry out too many steps to perform a task, only to discover a mistake was made earlier and they need to start all over again

# Gimmicks

- Amusing to the designer but not the user, e.g.
  - Clicking on a link to a website only to discover that it is still ‘under construction’



# Error messages

“The application Word Wonder has unexpectedly quit due to a type 2 error.”

Why not instead:

“the application has *expectedly* quit due to poor coding in the operating system”

- 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 messages

## Error 404 – Web Page Not Found

**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](#)

**Figure 5.8** An error message that appears if a user types in his or her personal details for accessing the protected website incorrectly

# More helpful error message



VILNIUS UNIVERSITY

[Lietuvių](#) | [Sitemap](#)

☐ Website ☒ Contacts

[ABOUT US](#) [STUDIES](#) [RESEARCH](#) [INTERNATIONAL COOPERATION](#) [NEWS & EVENTS](#)

[f](#) [YouTube](#) [t](#) [Foursquare](#) [G+](#) [i](#) [E-SERVICES](#)

# 404

Page not found

## The page cannot be found

The page you are looking for might have been removed, had its name changed, or is temporarily unavailable.

### What can you do about it?

- If you typed page address in the Address bar manually, make sure that it is spelled correctly.
- Go to the [home page](#), and then look for links to the information you want.
- Use the search form above to find what you're looking for.
- Call us **+370-5-2687001** or email us [infor@cr.vu.lt](mailto:infor@cr.vu.lt).

© 1997-2016 Vilnius University | Institutional code 211950810 | VAT number LT119508113  
3 Universiteto St, LT-01513 Vilnius, Lithuania | Tel. +370-5-2687000 | Fax +370-5-2687009 | E-mail [infor@cr.vu.lt](mailto:infor@cr.vu.lt)

[Webmaster](#)

# Custom 404 pages

ERROR 404

## Page not available. But Justin is.

Justin is a Mint developer who likes slow cars, sharp crayons, reheated pizza and awkward silence. Email him at [justin \[ at \] mint.com](mailto:justin@mint.com).

But if you're more interested in personal finance than in Justin, try the links below:



From [The Interaction Design Foundation](http://www.id-book.com)

# Custom 404 page: magnt

## Venn of a 404



Please take me to the homepage

## The Venn Diagram

Venn diagrams or set diagrams are diagrams that show all hypothetically possible logical relations between a finite collection of sets (groups of things). Venn diagrams were conceived around 1880 by John Venn. They are used in many fields, including set theory, probability, logic, statistics, computer science, and trying to visit web pages that don't exist.

<http://www.magnt.com/404/>

# Cutom 404 page: Limpfish



[www.limpfish.com](http://www.limpfish.com) | [www.poieditor.com](http://www.poieditor.com) | [www.assotron.net](http://www.assotron.net)



# Custom 404 pages: whitespark

404? Oh Snap!

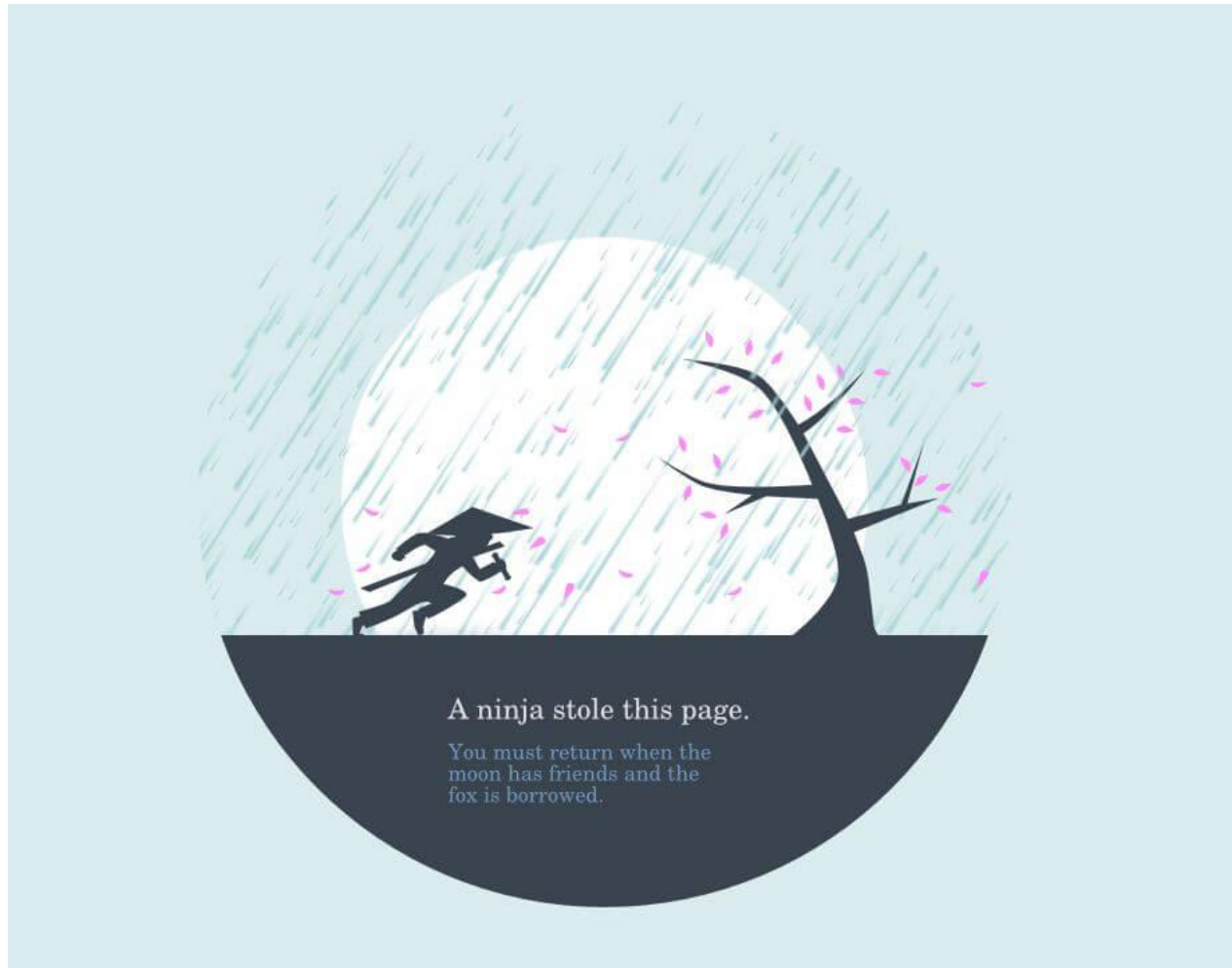
We told Brent to find this page for you, but he couldn't. We pride ourselves on meeting expectations, so to make it up to you, we're going to fire Brent.

Don't Do That!

Good Riddance.



# Custom 404 pages: Huwshimi



# Well designed 404 page

 [About](#) [Act](#) [Issues](#) [Shop](#) [More](#) [En Español](#)

[Donate](#)

## Trying to get where you want to go?

This page isn't it.

But while you're here, how about signing  
up to volunteer?



### Get texts from Hillary

Phone number

Email

[Text me](#)

By clicking "Text me", you agree that you would like to receive periodic text messages from Hillary for America. Msg&Data rates may apply. Text STOP to cancel or HELP for help. [Terms of Service](#) / [Privacy Policy](#)

### Learn

[About](#)

[Issues](#)

[Blog](#)

[Speeches](#)

### Get involved

[Volunteer](#)

[Shop](#)

[Jobs and  
internships](#)

[Donate](#)

[Raise](#)

[Protect the vote](#)

### Follow

[Facebook](#)

[Twitter](#)

[YouTube](#)

[Instagram](#)

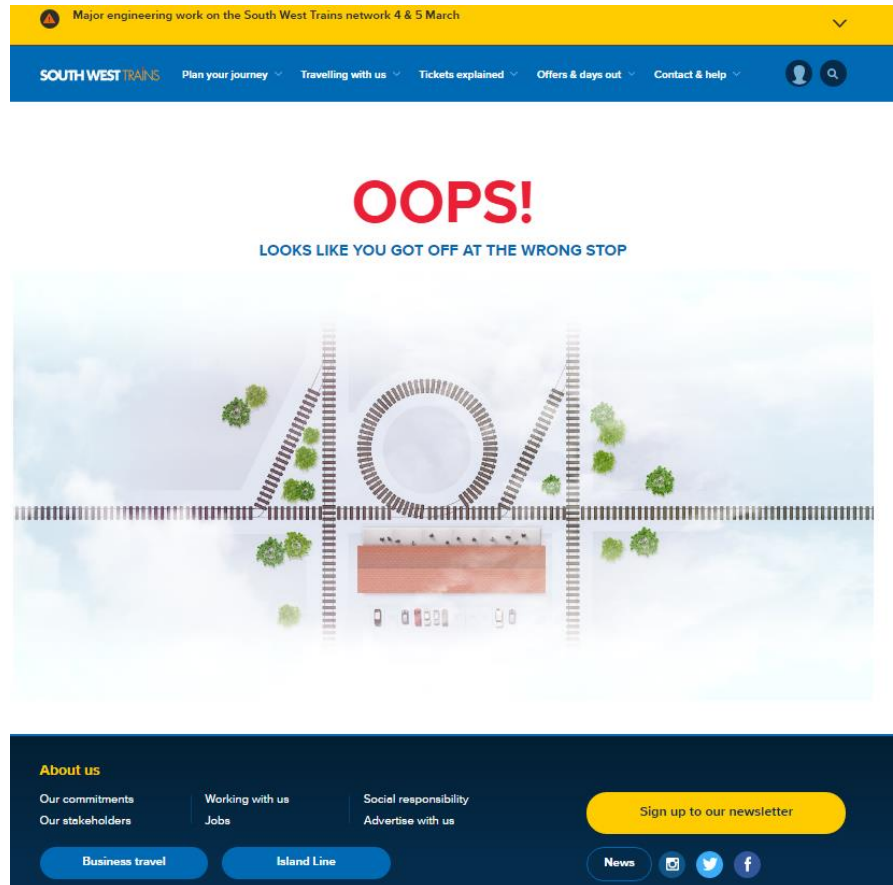
[Pinterest](#)

[LinkedIn](#)

[Medium](#)

From [Creative Blog: https://www.hillaryclinton.com/404](https://www.hillaryclinton.com/404)

# Custom 404 page: South West Trains



Creative Blog

# Should computers say they're sorry?

- Reeves and Naas (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”
- An empirical study comparing error messages that apologized versus those that did not
  - were perceived by users to be less frustrating

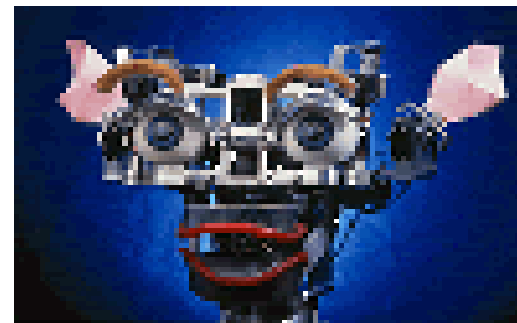
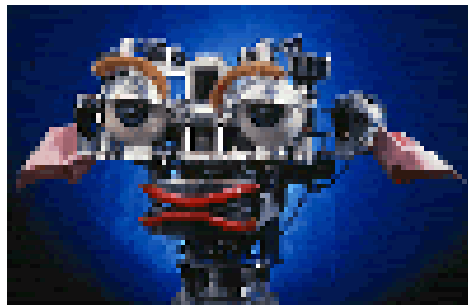
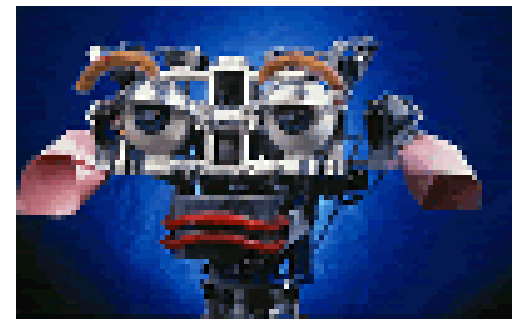
# Detecting emotions and emotional technology

- 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

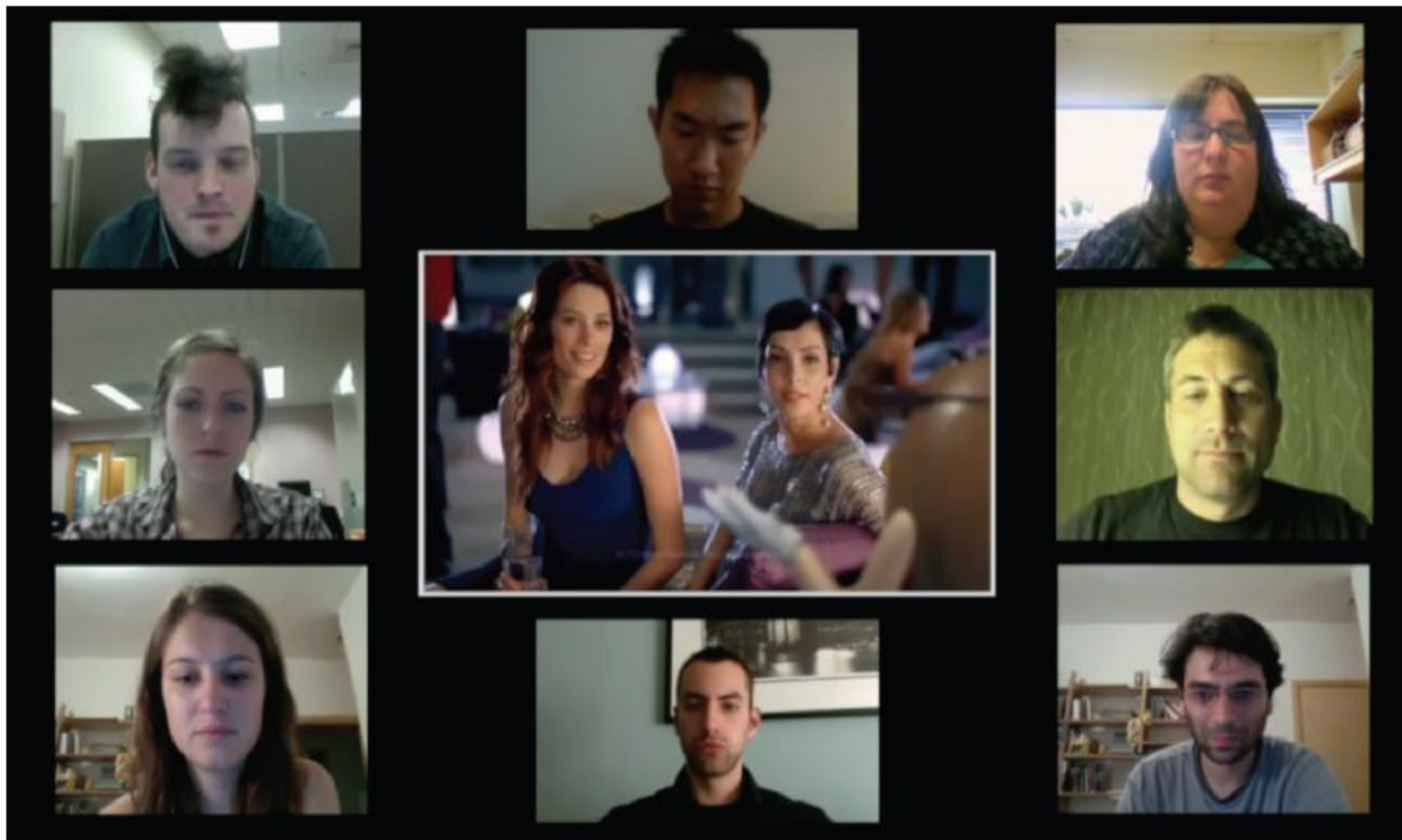
- Measures a user's emotions as they interact with a computer or tablet
- Analyses images captured by a webcam of their face
- Uses this to gauge how engaged the user is when looking at movies, online shopping sites and ads
- 6 core expressions - sadness, happiness, disgust, fear, surprise and anger

# Kismet - humanoid robot (1999)



[Breazeal, C. \(1999\)](#)





**Figure 5.9** A screen shot showing facial coding from Affdex software

*Source:* Courtesy of Affectiva, Inc.

# How to use the emotional data?

- If user screws up their face when an ad pops up -> feel disgust
- 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

# Indirect emotion detection

- Beginning to be used more to infer or predict someone's behavior
- For example, determining a person's suitability for a job, or how they will vote at an election
- Do you think it is creepy that technology can read your emotions from your facial expressions or from your tweets?

# 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 drawing an attention

# Nintendo's Pocket Pikachu



- Changing bad habits and improving well being
  - Designed to motivate children to be more physically active on a regular basis
  - owner of the digital pet that ‘lives’ in the device is required to walk, run, or jump
  - If owner does not exercise the virtual pet becomes angry and refuses to play anymore

# Waterbot



- A monitoring and feedback device developed to reduce usage of water
- Sensor-based system sounded positive auditory messages were sounded when the tap was turned off.
- Water lightening - a reward for water-saving behavior

# What is more effective?

counting



threatening



# How effective?

- Is the use of novel forms of interactive technologies
  - e.g., the combination of sensors and dynamically updated information that
  - monitor, nag, or send personalized messages intermittently to a person more effective at changing a person's behavior than
  - non-interactive methods, such as the placement of warning signs, labels, or ads in prominent positions?



# Can playful methods change people's behavior?

- The Piano Staircase  
<http://youtu.be/2lXh2n0aPyw>
- The Outdoor Bin  
<http://youtu.be/cbEKAwCoCKw>

([www.thefuntheory.com](http://www.thefuntheory.com))

# Which is most effective?



**Figure 5.11** Stairs versus elevators: static sign versus ambient persuasive displays. Which is most persuasive?

(Continued)

# Tracking devices

- 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
- Also apps that encourage reflection that in turn increase well-being and happiness

# Energy reduction



(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).

# The Tidy Street project

- large-scale visualization of the street's electricity usage
  - stenciled display on the road surface using chalk
  - provided realtime feedback that all could see change each day
  - reduced electricity consumption by 15%



Figure 5.13 Looking down at the Tidy Street public electricity graph from a bedroom window



# Phishing and trust



- Phishing – a play of the term fishing
  - the sophisticated way of luring users' financial information and passwords
- Web used to deceive people into parting with personal details
  - e.g. Paypal, eBay and won the lottery letters
- Allows Internet fraudsters to access their bank accounts and draw money from them
- Many vulnerable people fall for it
- The art of deception is centuries old but internet allows ever more ingenious ways to trick people

1927  
Karl Barthel advertisement:  
Breakfast is from 7 to 10 AM, and  
Lunch is from 12:00 to 2:00 PM.  
So don't be late.



# 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 human-computer interaction
  - Make user experience more enjoyable, more motivating, make people feel at ease, reduce anxiety



# Which do you prefer?

## 1. As a 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.”



# Which do you prefer?

## 2. Feedback when get something wrong

1. *“Now Chris, that’s not right. You can do better than that. Try again.”*
2. *“Incorrect. Try again.”*

Is there a difference as to what you prefer depending on type of message? Why?

# Evidence to support anthropomorphism

- Reeves and Naas (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

# Criticism of anthropomorphism

- 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



[www.id-book.com](http://www.id-book.com)



# Disadvantages

- 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?

# Virtual agents

- What do the virtual agents do?
- Do they elicit an emotional response in you?
- Do you trust them?
- What is the style of interaction?
- What facial expression do they have?
- Are they believable, pushy, helpful?
- Would it be different if they were male?  
If so, how?

# What makes a virtual agent believable?

- Believability refers to the extent to which users come to believe an agent's intentions and personality
- Appearance is very important
  - Are simple cartoon-like characters or more realistic characters, resembling the human form more believable?
- Behaviour is very important
  - How an agent moves, gestures and refers to objects on the screen
  - Exaggeration of facial expressions and gestures to show underlying emotions (c.f. animation industry)

# Robot-like or cuddly?

- Which do you prefer and why?



(a)



(b)

**Figure 5.14** Two kinds of robot pets

*Source:* (a) Courtesy of Sony Corporation, (b) Reproduced with permission of Steve Yohanan. *Photo:* Martin Dee.



# Implications

- Should we create products that adapt according to people's different emotional states?
  - When people are feeling angry should an interface be more attentive and informative than when they are happy?
- Is Norman right?
  - designers “can get away with more” for products intended to be used during leisure time than those designed for serious tasks

# Summary

- Emotional aspects of interaction design concerned with how to facilitate certain states (e.g. pleasure) or avoid reactions (e.g. frustration)
- Well-designed interfaces can elicit good feelings in people
- Aesthetically pleasing interfaces can be a pleasure to use
- Expressive interfaces can provide reassuring feedback to users
- Badly designed interfaces make people frustrated, annoyed, or angry
- Emotional technologies can be designed to persuade people to change their behaviors or attitudes
- Anthropomorphism is the attribution of human qualities to objects
- Virtual agents and robot pets have been developed to make people feel motivated, reassured, and in a good mood

# References

- Helen Sharp, Yvonne Rogers, Jenny Preece. **Interaction Design: Beyond Human-Computer Interaction.** John Wiley & Sons, 2015
- Navigation drawers. [Community by UXPin](#)
- 6 Web Design Trends You Must Know for 2015 & 2016, [Awwwards.com](#)
- Breazeal, C. (1999) [Kismet: A robot for social interactions with humans.](#)
- Creative Blog. [34 brilliantly designed 404 error pages](#)