

# Module\_5

# User Emotional Characteristics

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# Introduction

- Human emotions are an important part of user interface design
- The emotions that are intended to be evoked by the users should be considered while designing the interface
- The interface can heavily affect the emotional state of the user.

# Introduction Emotional Design

- Emotional design strives to create products that elicit appropriate emotions, in order to create a positive experience for the user.
- To do so, designers consider the connections that can form between
  - **users** and the **objects they use**,
  - and the **emotions that can arise from them**.

# Introduction Emotional Design Cont..

- The emotions a product elicits can *strongly* influence users' perceptions of it.
- **Emotions play a central role in the human ability to understand and learn about the world.**
- Positive experiences kindle our curiosity, and negative ones protect us from repeating mistakes.

# Three Ways of Forming Emotional Connections

- **Visceral** *(Means relating to deep inward feelings rather than to the intellect.)*
  - First reaction to the interface
- **Behavioral**
  - Reaction based on how the interface is expected to perform
- **Reflective**
  - Estimation based on how the interface can affect the future of the user

# The three ways that good design makes you happy | Don Norman

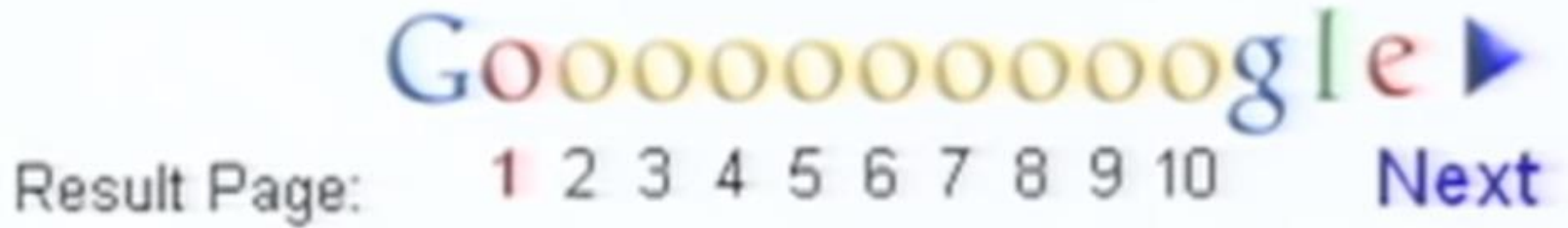
- [Video on How design make you happy](#)

Norman, D. (2013)



12:41

The user evaluates the interface at least partially by whether the design was sufficiently easy to use and learn *(Norman, 2013)*.



# Emotional Web Usability Evaluation

- The paper presents a framework for emotional interface where a method for emotional interface evaluation is proposed and the emotion eliciting conditions in online graphic interfaces are explored.
- purpose of the evaluation two online storytelling interfaces are compared:
  - a plain user friendly interface versus animated with images interface.
- The results are analyzed for the user's emotional responses as well as for the user's feedback on the functionality of the interfaces.
  - It is **shown that users find “positive emotion” web sites more functional, than the non emotional ones.**



# Emotional Feedback Mechanisms

- *Chen's* study focused on the way students engaged with their learning interface
- Provided three mechanisms of feedback:
  1. Emotive
  2. Dialogue
  3. Diagnostic
- Students were most engaged when provided both emotive and dialogue-based feedback

# Emotional Feedback Mechanisms - Emotive

- Visual representations of emotions via an avatar
- Provides vague information of current environment, not good for fine-tuning the learning process
- Provides the greatest degree of emotional engagement
- Excellent results when paired with dialogue-based feedback

# Emotional Feedback Mechanisms - Diagnostic

- Diagnostic feedback is a displayed “skill level”
- Provides objective information about a user relative to expectations and peers
- Offers little to no insight of weaknesses and strengths
- “Cold” interface design

# Emotional Feedback Mechanisms - Dialogue

- Provides textual or auditory dialogue feedback
- Often “generic” in nature due to wide intended audience
- Finely tuned dialogue feedback may provide the most useful information
- Can provide the most direct knowledge of strengths and weaknesses when finely tuned

# What is User Experience (UX) Design?

- User experience (UX) design is the process design teams use to create products that provide meaningful and relevant experiences to users.
- This involves the design of the entire process of acquiring and integrating the product, including aspects of branding, design, usability and function.
  - [Video - Learn about the History of UX](#)

# — Don Norman, inventor of the term “User Experience”

Video – [UX Experience](#)

**7** Factors  
that  
Affect  
UX  
(The UX Honeycomb)



# Polzin and Waibel's Study

- Explains how people are polite to their computers even without a character or face present
- Users treat their computers as another living being
- They try and connect on an emotional level
- Study attempted to create an adaptive interface

# Polzin and Waibel's Study cont...

- The study focused on verbal and nonverbal communications
- Word Choice
- Prosody- Patterns of stress and intonations in speech
- Spectral- voice quality and clarity
- All are very important for accurately gauging emotion



## Polzin and Waibel's Study cont...

- They had their model listen to different english speaking movies
- Each line listened to had to be consistent
- Each line also needed to coincide with sentence or utterance boundaries
- Three primary emotions studied were Angry, Sad and Neutral

## Polzin and Waibel's Study cont...

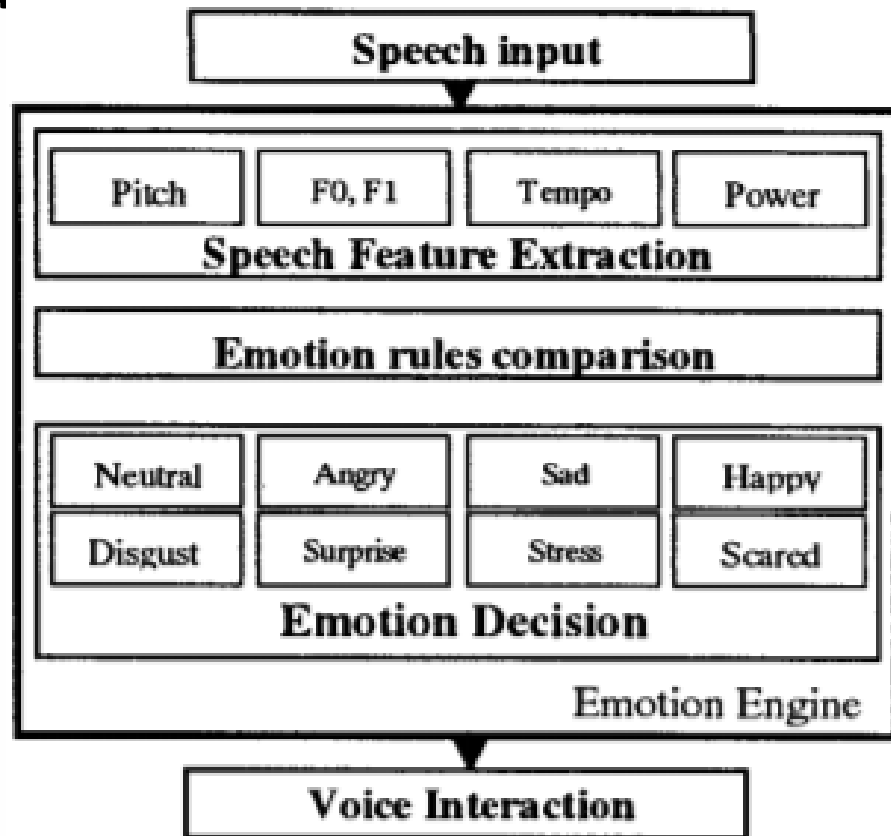
- Results of study fell short when compared to human participants
- However results were above the level of chance
- The models still fell within 10% of the participants through the different tests performed

# Kostov and Fukuda Study

- Explained how the **future focus of interface design will shift towards the user experience and away from the functionality of the interface**
- Similar to Polzin and Waibel except focused on different aspects of speech
  - Pitch
  - Formants
  - Tempo
  - Power

# Kostov and Fukuda Study

The system would record the four different aspects of speech and then put them through the Emotion Engine



# Kostov and Fukuda Study- Pitch

- Measured in mels where 1000 mels is equal to 1000 hertz
- Anger and Disgust nearly indistinguishable
- All other emotions were easier to separate from the above two

# Kostov and Fukuda Study- Formants

- Fundamental frequency is  $f_0$  and higher frequencies are  $f_1, f_2, f_3, \dots$
- Only  $f_0$  and  $f_1$  used in this study
- There was correlation between  $f_0$  rise time, slope and speaking rate

# Kostov and Fukuda Study- Tempo

- Most difficult to analyze of all four
- Used loudness-time scale and morse keys to accurately gauge
- Faster tempos suggested stress or excitement
- Slower tempos suggested sadness

# Kostov and Fukuda Study- Power

- Sound pressure Generated from speech
- Anger had 20 decibel difference from all other emotions except for happiness which was a 10 decibel difference
- Capable of determining anger and happiness, but not sadness, normal or disgust



# Human Action Cycle

- Described by Norman as early as 1988
- Predates most digital interfaces
  - Still highly applicable to modern systems
- Describes the workflow of using an interface, digital or physical
- Three main stages:
  - Goal formation
  - Execution
  - Evaluation

# Human Action Cycle - Goal Formation

- One-part phase
- Can the user describe their goals?
- Can the user describe tasks related to their goals?

# Human Action Cycle - Execution

- 3 sub-phases:
  - Goal to Task translation
  - Task Sequencing
  - Task Sequence Execution
- Does the UI help break the goals down into steps?
- Does the UI help show what order to execute tasks in?
- Does the UI allow the user to execute the necessary tasks?

# Human Action Cycle - Evaluation

- 3 sub-phases:
  - **Perceive results**
  - **Interpret actual outcomes vs expected outcomes**
  - **Comparing results with original intent**
- Does the user have enough information to see the effects of a task in the system?
- Does the user have enough information to interpret what those effects mean?
- Did the outcome match what the user wanted to happen?

# Graphical Design and Emotion

- Concepts applicable to physical art and interfaces as well as digital systems
- Mental influence of **color**
- Mental influence of **layout**
- Mental influence of **tertiary** *(third in order or level)* **elements**

# Graphical Design and Emotion

- **Color** has traditional meanings that may translate to emotion to a user
- User's mental state as well as culture may determine what those emotions are
- **Colors** commonly used to denote warnings or danger in an interface
  - Most effective when using contrasting colors that stand out

# Graphical Design and Emotion

- **Layout of information may influence user decisions**
- **Eye is drawn to center of screen first, then follows flow of information**
- Varied layout may be visually interesting, but sacrifices readability
- Partitioned information is most “clean” design

# Graphical Design and Emotion

- Tertiary design choices influence emotion as well
- **Bold, blocky imagery gives feeling of stability and authority**
- **Curvilinear and floral designs give feeling of energy and progress or change**
- Mixing choices is discouraged due to perceived “tension” in design
  - Punctuating one with small elements of the other may have overall positive effect
  - May also provide points of interest in a layout



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