Setting the Shape of Emotion-Oriented Computing

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http://emotion-research.net
Intention of this talk

- A clearer view of applications
  - understanding properly
    (after the first rush of enthusiasm)
  - “why the world wants emotion-oriented computing”
  - major road blocks

- Long-term research agenda
  - understanding
    (after the first rush of enthusiasm)
  - doing it properly takes time
A clearer view of applications

- In 2001, we dreamed up a list of applications
- In 2006, we can see which are turning into realities – and why …
- Not necessarily the most dramatic
- Certainly not the most ambitious (though their time will come)
Why the world wants emotion-oriented computing

- People want to connect with friends.
- Emotion makes communication more effective.
- People buy things they like (and like to use).
- People want to feel safe.
- People don’t want to feel excluded.
Why the world wants emotion-oriented computing

“What the consumer wants most of all is emotions”

Gerard Kleisterlee, CEO Philips
(Der Spiegel, 1 Sept 2006)
Why the world wants emotion-oriented computing

Don Norman: “Logic is wonderful, but it doesn’t describe real behavior”

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People want to feel safe.

Emotional factors in interface design

People buy things they like (and like to use)

People want to connect with

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People buy things they like (and like to use)

People want to connect with
Why the world wants emotion-oriented computing

People want to connect with friends.

Emotion makes communication

People buy things they like

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- smileys
- eMoto: a pen for sending emotionally coloured text messages
- Chatako: emotional TTS for voice-disabled patients
Why the world wants emotion-oriented computing

People want to connect with friends.

Emotion makes communication

People buy things they like

social + emotional models in games + virtual communities

The Sims: Best-selling PC game

Vasalou: DigitalBlush - forgiveness & trust in web communities

NECA Socialite: web-based student community

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Why the world wants emotion-oriented computing

Emotion makes communication socially competent. People want to connect with friends. People buy things they like.

Virtual Humans or Pets

Socially competent anthropomorphic (?) interfaces

Toy robots: Aibo, Pleo

Household robots: ASIMO

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Why the world wants emotion-oriented computing

Emotion makes communication more effective

T-Systems: emotion-aware voice portal

IBM: expressive synthetic voice for good/bad news

Accenture: emotion recognition project

People don’t want to feel

People want to connect with
Why the world wants emotion-oriented computing

Emotion makes communication more effective

Cosmo pedagogical agent

emotional communication for eLearning

MySelf: affective profiling for eLearning

FearNot! learning anti-bullying strategies

People don’t want to feel

People want to connect with
Why the world wants emotion-oriented computing

Emotion makes communication more effective

Cantoche: Sam, virtual citizen of Issy-les-Moulineaux

NECA eShowroom

B2C communication

HUMAINE promotional campaign

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People don’t want to feel

People want to connect with
Why the world wants emotion-oriented computing

People want to feel safe.

People don’t want to feel excluded.

Emotion makes communication assisted living.

Support for the elderly

“coach”-type tools: ITSPROKE exercise tutor

SICS, Microsoft: Affective Diary

People want to feel safe.

Emotion makes communication
Why the world wants emotion-oriented computing

- People want to feel safe.
- People don’t want to feel excluded.
- Emotion makes communication therapy for emotion-related disorders
  - stress & burnout
  - Cognitive Behaviour Therapy for anxiety, depression, social phobias

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Why the world wants emotion-oriented computing

People want to feel safe.

- responsible research & product development
- ethical guidelines
- consumer protection

People buy things they like.

People don’t want to feel
Why the world wants emotion-oriented computing

People buy things they like.

People want to feel safe.

Don Norman: “tense” car signals danger.

Thales: panic detection in public places.

affective monitoring

car industry: driver stress & fatigue
Why the world wants emotion-oriented computing

- Realistic applications are numerous
- but small & specialised

- Is there nothing more substantial to look forward to?

People buy things they like (and like to use)
People want to connect with friends.
Emotion makes communication more effective.
People don’t want to feel excluded.
People want to feel safe.
People want to feel safe.

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Long-term applications

“Truly natural” speech technology:
Systems that you can talk to like another person
- need to include emotions and social behaviour

Well-grounded cognitive systems
- emotions give relevance to things
Long-term applications: Major road blocks

 대하여

Enabling technologies
- speech recognition, natural language understanding, …
- semantic+adaptive audiovisual analysis/synthesis
- blending of cognition and perception technologies

Coherent research
- understanding the nature of the phenomena we are trying to model
In the past:
- notoriously fragmented research area
- engineers often favoured simplistic solutions

HUMAINE started in 2004
- to form a research community
- with a shared understanding of the issues
- with a unified research agenda
Coherent research on emotion-oriented computing

A long-term research agenda
Coherent research on emotion-oriented computing

Example: Raw empirical data

Acted

Induced

TV interviews

In action

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Example: Raw empirical data

Describe the real complexity of natural emotion
- Emotion words
- Emotion-related states
- Combination types (mix of emotions)
- Authenticity
- ‘Core affect’ dimensions
- Appraisal categories
- Context labels
- Key events: what the emotion is about, etc.
Coherent research on emotion-oriented computing

Example: Raw empirical data

annotation scheme facing up to the richness of human emotion
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Example: Towards a standard markup language

**Emotion Annotation and Representation Language**

- first specification draft within HUMAINE

```xml
<emotion category="pleasure" intensity="0.9"
  regulation="simulate" modality="face" confidence="0.5">
  Hello!
</emotion>
```

Created a **W3C Emotion Incubator Group** for discussing standardisation
Coherent research on emotion-oriented computing

Current projects

🔥 NoE HUMAINE (-> 12/07)
- is bringing together a rich set of resources
  - theories, technologies, test bed environments
- will continue to exist as a “HUMAINE Association”

🔥 Two new FP6 projects just started

CALLAS
Conveying Affectiveness in Leading-edge Living Adaptive Systems

FEELIX GROWING
FEEL, Interact, eXpress: a Global appRoach to develOpment With INterdisciplinary Grounding
Conclusion

Research on emotion-oriented computing addresses real people’s needs
- short term: numerous specialised applications
- long term: core requirement for natural interfaces

Progress needs coherent research
- a measure of basic research
- to understand/model/deal with the richness of people’s emotional life