Artificial Emotions I

A Cognitive Model

Proseminar Human-Computer-Interaction SS09
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Why do we need a cognitive model?

Algorithmic approach to generate an appropriate emotional reaction in the specific situation
Eliciting condition

Computation Of Emotion

Resulting emotion
Consequences of events → desirability

Actions of agents → praiseworthiness

Aspects of objects → appealingness
Figure 2.1. Global structure of emotion types.
Consequences of events

Pleased / Displeased

Focusing on

Consequences For Others

Desirable For Other

Happy-for
Resentment

Schadenfreude
Pity

FORTUNES OF OTHER

Undesirable For Other

Prospects relevant

Prospects irrelevant

Consequences For Self

Prospects relevant

Joy
Distress

Well-Being
Consequences
For Self

Prospects
relevant

Hope
Fear

Confirmed
Disconfirmed

Satisfaction
Fears-confirmed

disappointment
relief

PROSPECT-BASED
Consequences Of Events

Consequences For Self

Joy
Distress

Well-Being

Gratification
Remorse

Gratitude
Anger

WELL-BEING/ATTRIBUTION

Actions of Agents

Approving / Disapproving

Focusing on

Self Agent

Pride
Shame

OTHER AGENT

Admiration
Reproach

ATTRIBUTION

Figure 2.1: Global structure of emotions.
Aspects of Objects

Liking / Disliking

Love
Hate

ATTRACTION
Temporal occurrence of differentiated emotions

Event-based Emotions \rightarrow Attribution Emotions \rightarrow Attraction Emotions
Part 2 – The Appraisal Structure
Event-based Emotions

Desirability

Goals
Goals and their classification

Goals = states of affairs one wants to obtain

Approach by Schank & Abelson (1977):

→ Achievement goals
→ Entertainment goals
→ Crisis goals
→ Instrumental goals
→ Preservation Goals
→ Satisfaction goals

Our Approach:

→ Active-pursuit goals (A-Goals)
→ Interest Goals (I-Goals)
→ Replenishment goals (R-Goals)
All-or-none goals ↔ Partially attainable goals
Attraction Emotions

Appealingness

Attitudes
Standards and attitudes

Standards = states of affairs one believes \textit{ought} to obtain

→ standards of behavior
→ standards of performance

→ social justification

Attitudes = basis of appraisal of appealingness

→ no justification
Part 3 – Factors affecting the Intensity of Emotions
Global Variables:

→ sense of reality

→ proximity

→ unexpectedness

→ arousal
Local Variables

valenced reactions

Event-based emotions

- desirability
  - (pleased/displeased)

Attribution Emotions

- praiseworthiness
  - (approving/disapproving)

Attraction emotions

- appealingness
  - (liking/disliking)
Figure 4.1. Global structure of local intensity variables.
Event-based emotions

Fortunes of others emotions
- desirability for others
- deservingness
- liking
  - (happy-for/pity)
  - gloating/resentment
  - etc.

Fortunes of self emotions
- Prospect-based emotions
- Well-Being emotions
- likelihood
  - (hope/fear)
  - etc.
- (joy/distress)
  - etc.
Prospect-based emotions

likelihood

(hope/fear)

etc.

effort

realization

(relief/disappointment
satisfaction/fears-confirmed)

etc.
Well-Being emotions

(joy/distress)

etc.

Attribution emotions

praiseworthiness

(approving/disapproving)

strength of unit expectation deviation

(pride/shame admiration/reproach)

etc.

(gratification/remorse gratitude/anger)

etc.
Attraction emotions

appealingness
(liking/disliking)

familiarity

(love/hate)

etc.
Eliciting condition

Computation Of Emotion

Resulting emotion
Thank you for your attention
Any Questions?