

humaine

emotion-research.net

*Embodied Emotion, Cognition and Action for
Autonomous and Interactive Artifacts*

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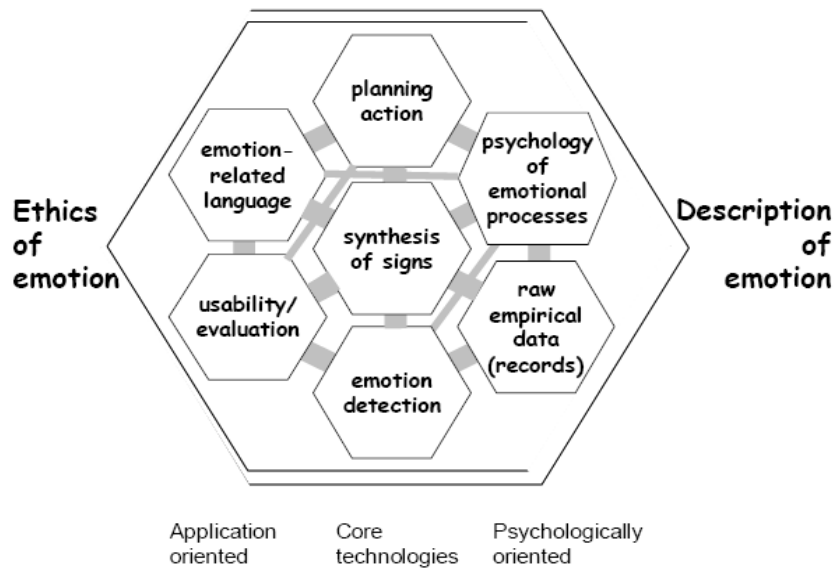
<http://homepages.feis.herts.ac.uk/~comqlc>

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Objectives

- ◆ Principled steps towards making interaction between humans and machines more natural
- ◆ Machines should become able
 - ➔ to *register* human emotions (and related states)
 - ➔ to *convey* emotions (and related states)
 - ➔ to “understand” & *respond* to the emotional relevance of events
- ◆ Scientific basis for making research cumulative
- ◆ Building a community working on emotion-oriented systems
 - ➔ phase 1: establish common language and research directions
 - ➔ phase 2: exemplars showing “how to do things in a principled way” (not an IP! We are not building systems!)

HUMAINE research at a glance



NoE, 33 partners, multiple disciplines
2004-2007 (IST call 1, Multimodal interfaces)
Coordinator: QUB (Roddy Cowie)

- WP3: *Theories and models* (Klaus Scherer, GERG)
- WP4: *Signals & signs of emotion* (Stefanos Kollias, ICCS)
- WP5: *Emotion databases* (Ellen Douglas-Cowie, QUB)
- WP6: *Emotion in interactions* (Catherine Pelachaud, Paris8)
- WP7: *E. in Cognition and Action* (Lola Cañamero, UH)
- WP8: *Communication, persuasion* (Oliviero Stock, ITC)
- WP9: *Usability of em. systems* (Kia Höök, KTH)

WP7: Emotion in Cognition and Action

- **Scope:** investigating emotion influences in cognition and action using artifacts
 - ➔ Enhance behavior & interactions of emotion-oriented systems
 - ➔ Feedback to emotion theorists (synthetic approach, operationalize)
- **Exemplar:**
 - ➔ *Comparative approaches to emotion-oriented architectures: assumptions, integration challenges, and guidelines for future research*
 - ➔ Exemplar divided in four elements

E1: Emotion in embodied cognition and action

- ◆ **Scope:** Interactions between emotion & cognition-action as occurring through the “body”
- ◆ **Subtasks:**
 - ➔ Emotional modulation of perception-action in embodied agent (LEGO, AIBO, Koala robots)
 - ➔ Analysis of embodied emotion-oriented architectures and behavior of robots: ethological + mathematical
 - ➔ Novelty detection and emotion-attention interactions (ECAs)
- ◆ *Embodiment* is a fundamental aspect of emotions

E2: Emotion in reflective cognition and action

- ✦ **Scope:** Influence of emotions in cognition-action from the perspective of subjective perception and reasoning (introspection, linguistic accounts)
- ✦ **Subtasks:**
 - ➔ Role of BDI&E models and relation to rationality
 - ➔ Validation of cognitive models of emotion activation by means of ‘sensitivity analysis’
 - ➔ ‘Interpretation’ of emotional expressions displayed by the user, dialogue systems
- ✦ *Embodiment* needed: e.g. believability, trust

E3: Emotions in bridging gap embodied-reflective cognition&action

- ✦ **Scope:** Role of emotions in relating behavioral meaning and symbolic representations
- ✦ **Subtasks:**
 - ➔ Scenario-based survey of bridging functions of emotions
 - ➔ Improving upon symbolic models of reflective cognition & action
 - ➔ Improving upon embodied models of cognition & action
 - ➔ Bridging the gap between micro- (individual-based) and macro- (social) views on social functions of emotion
- ✦ *Embodiment* in bridging the gap (e.g. anticipation)

E4: emotions in social cognition and interaction

- ✦ **Scope:** roles of emotions in social cognition and interaction; emotions, cognition and action not modeled from the perspective of the individual but of the interaction itself.
- ✦ **Subtasks:**
 - ➔ Towards socially meaningful emotional agents: Closing the emotion recognition-generation-expression loop
 - ➔ Socially situated nature of emotions: Socially situated affective dialogue
- ✦ *Embodiment* vital for social interaction

WP7 Exemplar: the four elements

