

## **Studying affect and emotions as important parts of the user experience**

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### *Introduction*

Emotions in HCI are studied from different perspectives. Within this position paper I want to address three topics relating to this issue. First, I describe my understanding of different sub disciplines in HCI concerned with emotions and define our viewpoint. Then, I present our conceptual framework studying the user experience and the role of emotions and affect within it. Concluding, I want to give some statements on possible links to the other sub disciplines.

### *Defining our viewpoint: distinguishing between different approaches to emotion in HCI*

One research field concerned with emotions in HCI is the affective computing systems approach (Picard, 1997). Simply described affective computing systems recognize users' emotion, model user's affective states, adapt to the user's affective state and express emotion. (Hudlicka, 2003). A different focus is taken in the emotional system design approach (Norman, 2004). Here affect and emotion are studied as important parts of the users' experience with interactive systems and the aim is to consider emotional aspects in the interactive system design process.

In the emotional system design sub discipline I again distinguish two foci: emotional design and evaluation. While emotional designers focus on designing systems considering emotional aspects of the user experience and need knowledge and methods on how to design for emotions, the emotional evaluators concentrate on integrating emotional aspects of the user experience into the evaluation process of interactive systems. They need knowledge and methods on how to assess emotional user reactions. Our perspective is the emotional evaluators one: we are interested in studying affect and emotion as important parts of the users' experience with the aim to integrate emotional aspects into the interactive system evaluation process.

### *Evaluation of emotional aspects as part of an integrative approach to the user experience*

Our framework for developing a user experience evaluation methodology integrates cognitive and affective/emotional components. Cognitive components are instrumental and non-instrumental quality assessments of the human-technology-interaction by the user (Mahlke, 2002). Instrumental quality aspects are criteria like the usefulness and ease of use of a system (e.g. Davis, Bagozzi, & Warshaw, 1989). Over the last years non-instrumental quality dimensions, like hedonic qualities or visual aesthetics, attracted a lot of attention (Hasenzahl, 2001; Tractinsky et al., 2000). We distinguish non-instrumental quality aspects from affective/emotional aspects of the user experience (Hasenzahl, 2005). From our understanding affective/emotional components can be on the one hand immediate, unmediated affective reactions and on the other hand more complex emotional consequences that result from a cognitive appraisal process.

Already, in Norman's (2004) three-level model of information processing emotional aspects play a role on different levels. The visceral level was studied by Katkin, Wiens, & Öhman (2001) who connected visceral perception with the development of gut feelings. Regarding the visceral level in the

interactive system domain the approach of Zhang & Li (2004) is promising. Emotional consequences are defined as more complex emotional phenomena. Desmet & Hekkert (2002) use the theory on emotions described by Ortony, Clore & Collins (1988) to describe the development of product emotions.

### *Discussion: connection of different approaches to emotion in HCI*

Some statements I want to give concern possible connections between the sub disciplines dealing with emotion in HCI and possible transfers of knowledge. The emotional evaluation and the emotional design approach are connected from definition: they should work hand in hand to consider emotional aspects in the design of interactive systems. What both need is a similar understanding about the role of emotion in designing interactive systems and systematic approaches to use it (Overbeeke & Wensveen, 2004). One topic therefore to be discussed is our distinction of non-instrumental quality assessments and affective/emotional aspects of the user experience. Also critics, like Hassenzahl's (2004) "emotions can be quite ephemeral. - we cannot design them" have to be considered.

The approaches of emotional evaluation and affective computing have first of all one common question to answer: how to assess the user's affective state? One important point is if we can use the methods for recognizing the user's emotion from affective computing in emotional evaluation procedures and vice versa. Current examples are Branco et al.'s (2005) use of EMG in an interactive system evaluation setting and Anttonen & Surakka's (2005) measurement of heart rate mostly intended for affective computing. Recently, in the affective computing approach an affective interfaces evaluation sub section (Isbister & Höök, 2005) develops that might have intersections with the emotional evaluation approach.

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