Emotion Sampling using Appraisals

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Introduction

This paper presents a description of current work which aims to identify the changes in a user's affective state during their interactive experiences with technology. In the recent stream of research to identify the emotions evoked by technology, most emotion studies have focused on the approach of collecting information on users' emotional states as consequences of interactive experiences [3]. Such an approach has been referred to as 'affect as information' [1]. We believe that in order to gain insight into the interactive experience, we need to capture people's experiences *during* their interactions with digital products, i.e. 'affect as experience' [1]. The 'affect as experience' approach sees emotions as dynamically experienced, and constructed in action and interaction; this moves the focus to helping people to understand and experience their own emotions, and leads to new design and evaluation strategies for devices [1].

The process during which emotions form dynamically during interactive experiences results in a highly personal, internal experience which can often be confusing, particularly because several emotions may be experienced at the same time [7]. A person may initially recognize the occurrence of an affective experience, but they then must distinguish between the emotions so that they can provide a verbal label. Many people may censor their own thoughts and feelings, which can result in inaccurate verbal reports of their emotions. Furthermore the use of language itself can introduce ambiguity: it does not make it easy to describe mixed emotions, and the meaning of emotion terms is often obscure [7].

Emotion Measurement

Lang (cited in [2]: 125) concluded that emotion and its processes manifest themselves in the visceral, behavioural and verbal states. The visceral and behavioural states exist in the subconscious space, while the verbal state exists in the conscious space [5], and only there do we achieve emotion. At the first level (visceral/behavioural) feelings based on instinctual and bodily behaviour can only be measured via physical instrumentation to collect the physiological or expressive data. Methods used in this *pre-cognitive* space require extra abstraction to fill in the blanks that would normally be filled by the process of cognition, and thus only succeed to measure *feeling* not *emotion*. On the second level (verbal/conscious) feelings transform into emotional states that can be measured in some context through traditional measurement techniques such as questionnaires or interviews. Using the discrete emotion theories, these labels depend on semantic categories of the language used [6]. This *post-cognitive* approach can be biased by a person's knowledge of emotional expression

and the bearing of the method towards specific representation types such as language or imagery.

Appraisal Theory

We have identified a conceptual model of emotion processing to describe the transfer from feeling to emotion and the importance of cognition in the emotional process, and suggest that that there is a space following the cognitive process, but before representations are applied [4]. This space (the cognitive 'centre of gravity') requires a different method for identifying emotions from those already in use for the pre- and post- cognitive levels. A technique adopted from psychology, appraisal theory, does this by requiring cognition but without the use of the commonly-associated emotion representations (words, images or gestures). The use of cognitive appraisals acknowledges the possibility that a person may be experiencing a mix of emotions at the same time [7].

The appraisal model (see [8]) uses a series of questions whose answers lead along different pathways to identify 17 different emotions. The model was developed by asking subjects to rate the cause of an emotion, rather than the thoughts they had once the emotion had begun. The strategy involved asking subjects about the *appraisals* that led to their emotion, rather than asking them about the *event* that led to their emotion. Subject recall emotional experiences, describe them in their own words, and answer a series of questions designed to measure their appraisals.

Emotion Sampling

The use of cognitive appraisals for emotion measurement has the potential to capture users' emotions *during* their interactions with digital products: it is human nature to want to speak about affective events soon after they have happened. The appraisal questions ask:

- Did you expect the event to happen?
- Did you want the event to happen?
- What caused the event to happen?
- How much control did you have over the event happening?
- What was the probability of the event happening?
- Did you want the event to stop or continue?

The questions are presented to the user via a prototype Emotion Sampling Device (ESD): the user can access the ESD software via a mobile phone or PDA. When the user experiences a positive or negative event during their interactions with technology, they can report the event by answering this simple set of questions. The software monitors their response pathways to identify the set of emotions evoked by the interactive event. The resulting data should provide a view of the ongoing interaction, including both peak and negative moments during the use period.

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