Recording Inner Life

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ABSTRACT
"Recording Inner Life" is the title of my master's thesis. It is a system to express the "inner life" (feelings, affects, and emotions) and record them on a long-term basis into a computational system. In contrast to a lot of the research in the field of affective computing this project is not dedicated to enable machines to detect human emotions but to allow an adequate input for emotions. It presents "MyInnerLife", a physical input device to express and record emotions non-verbally.

Author Keywords
emotion, input, non-verbal, diary

ACM Classification Keywords
H.5.2 User Interfaces

General Terms
Design, Documentation

INTRODUCTION
The aim of my thesis was to develop a physical input device to bridge the gap between the strictly determined world of computer systems on one side and the world of emotion expressions on the other. (This paper uses the term "emotions" as summary for "feelings", "affects" and "emotions".)

One motivation for this was the phenomenon of "life logging". The human desire to document and reflect on the own existence already inspired some projects in the last years that focused mainly on software interfaces (see projects like Mycrocosm [1] and Moodstats [2]) and sensors (e.g. the Affective Diary [3]). With the physical input device I want to support users to record an essential part of their life, their emotions, more adequate. I developed MyInnerLife, to be an input device that allows the development of an own, individual language to express emotions non-verbally.

The second motivation is the psychological therapy of patients with depressions. For some forms of depression patients have to keep an emotion diary. Consulted psychologists encouraged that MyInnerLife could support patients that have difficulties with verbalising their emotions to keep a non verbal emotion diary that serves as aid for therapist and patient.

TEI 2010, January 24–27, 2010, Cambridge, Massachusetts, USA.
ACM 978-1-60558-841-4/10/01.

One aim of my thesis was to raise the awareness for the own emotions by recording them. For this, I investigated in methods of automated recognition of emotions as well but did not find them usable in daily life yet (except from measuring arousal maybe). I decided for a manual input also because of another advantage: The process itself. Sitting down in the evening or during the day and performing the input actions has a reflective moment that can be worthwhile for the user as well.

MyInnerLife is a system consisting of an input device to record emotions without the need of verbalizing them and a revisualization of this data in a graphic user interface. For my thesis and this description the focus was on the physical input device mainly but I developed revisualization concepts as well. The developed data security concepts are left out here due to space limitations but are an important part of my thesis as well.

THE INPUT
The dimensional models of emotions inspired me to describe emotions with a combination of values of different scales. Since emotions are perceived and expressed quite individually, it was not the approach to develop a system with strictly determined scales (e.g. SAM [4]). Instead, a set of scales was developed which have units but are not assigned to a certain dimension of emotions. The user can visualise his emotions by adjusting the values for the different scales, defining their meaning for himself. MyInnerLife offers 3+1 scales:

1) Colour of the light of a LED
2) Pulsation of the light of a LED
3) Spatial arrangement of the illuminated LEDs

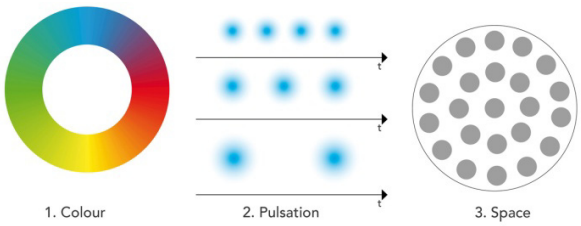

Figure 1: The scales. 3. shows the input area with the 23 LEDs.

They can be set on a circular input surface of 13cm in diameter with 23 LEDs. All scales refer to our perception of the environment and our bodies while experiencing emotions. The user can combine the scales individually. With this he creates his personal dimensional model of

emotion visualizations. The generated values within this model are stored in a computational system for later analysis/interpretation by the user (and his therapist). The computer only knows 23 RGB values, 23 pulsation frequencies, start and end time and date of the described emotional state.

The "+1" scale is a layer, a thin sheet of plastic, that can be placed on top of the input surface. Different layers can provide different functionalities and are assumed to be especially valuable in therapeutic context. For example figure two shows one that emphasizes the meaning of the spatial arrangement. For a therapy it could be agreed between therapist and patient that all inputs on the inner ring describe the patient's emotions while the outer ring stands for how the patient perceived his environment.

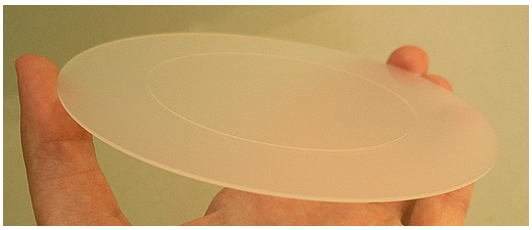

Figure 2: Layer with engraving to separate the LED rings.

THE INPUT INTERACTIONS

Firstly, the user sets the point in time or time span, he wants to describe, via a touch display (see Fig. 5). The actual input interactions should support the reflection and be adequate for the data to be entered: emotions.

By hovering above the input area the LED beneath lights up and starts a loop through the colours of the rainbow (see Fig. 3). So the user is forced to look at the available options and rethink about the emotional state he wants to enter. If the user thinks his emotion is represented by the colour correctly he lifts his finger again or presses it down to adjust the speed of pulsation (see Fig. 4). This works alike: A cycle of ascending and descending pulsation speed starts and stops when the finger is lifted. Additionally the user can place the different layers mentioned above on top of the surface.

The interface and input actions also match the four principles for the design of affective input, determined during the development of eMoto [5]: Embodiment, Natural but designed expressions, Affective loop and Ambiguity.

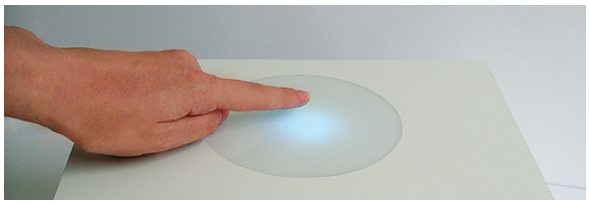

Figure 3: Hovering two centimeters above a LED to adjust the color on the functional prototype.

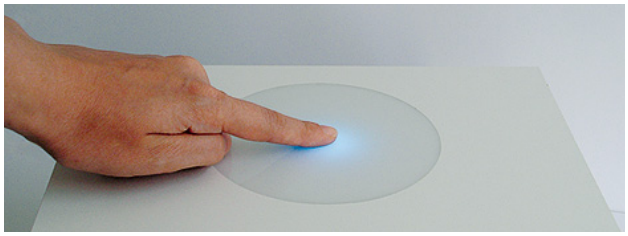

Figure 4: Touching the surface to adjust the pulsation speed on the functional prototype.

I think this work can be valuable for the discussion about tangible interactions because it tried to find an appropriate way of visualizing and interacting with very special data. This leads to a general question: Should the type or category of data influence the interactions and/or tangible objects?

Figure 5: A model of MyInnerLife with the input surface and the touch display to enter the time.

ACKNOWLEDGMENTS

I would like to thank my supervisors Prof. Reto Wettach and Prof. Boris Müller for their support and valuable critique.

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