Activating wearables

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Abstract
In this demo we show an active garment to support people in matters of emotion regulation and interactions with other people. This demonstrator shows the marriage of ‘hard’ technology and ‘soft’ textiles in a subtle moving wearable product.

Keywords

1 The demonstrator

The scarf helps you to express your emotional state of attractiveness to another person. When you come close to someone that you like, you get nervous and your heartbeat start to rise. The scarf starts to move according to this beat in an attempt to make the other person aware of your emotional state. The design was inspired by the work described in (Fejs, Toeters 2014).

Use-case scenario. Public areas are places where people meet each other, possibly new people or loved ones. Some men have trouble with contacting girls they feel attracted to. They are shy or afraid of rejection and with the presents of a certain person, the feeling of nervousness rises and your heart start to beat faster. In order to create opportunities for these men to open up, the scarf starts to move according to your heartbeat. Our hypothesis, constructed by
the research of Ferguson and Katkin (1996) is that the motion of the scarf attracts the attention of the girl and possibly provokes a conversation. This way you can break the barrier that’s holding you from meeting this girl and expressing your emotions to her. The heartbeat represents the relation between affection and the symbolic meaning of the heart. This scarf is meant for men, however future designs could also be applicable for women.

For a use-case scenario we refer to the movie which is online available: https://www.youtube.com/watch?v=aLOj-MekSNs.

Stefan Wiens, Elizabeth S. Mezzacappa, and Edward S. Katkin (2000) stated that “heartbeat detection as an index of self-perception of visceral activity is associated with intensity of emotional experience but not with valence.” This indicates that heartbeat can express the emotional state of the wearer. However, this is no indication for the type of emotional state. “Additionally, subjects who were able to perceive their own heartbeats were found to be more facially expressive than poor perceivers.” (Melissa L. Ferguson and Edward S. Katkin, 1996). The Butterfly effect helps the wearer to perceive their heartbeat, which helps him to express his emotional state to others.

Fig. 3. Still from The Butterfly Effect movie, product in context (© Ruben Daems)

Technology. A pulse sensor (http://pulsesensor.com/) measures your heartbeat; this can be done either on your fingertip or earlobe (Latin: Lobule). The sensor sends its data to an Arduino Lilypad (ATmega328) sewed into a compartment, which translates the data into a beat. The software compares the beat to three different states. If one of the states is true, the software sends a signal to the four servomotors. The servomotors are placed in a clip, which is sewed into the scarf. The servomotors set the triangles into motion by turning 80 degrees at three different speeds, according to the state of your heartbeat. The system works on 5.5V provided by a battery pack, which is integrated in the scarf.

Fig. 4 & 5. Lilipad and Pulse sensor ear clip (© Ruben Daems)

Surface design. The scarf exists of big and small triangles. See fig. 1 and 6. When the two sets of triangles, are combined, it will act like an abstract butterfly. The motion that is generated represents the fluttering of a butterfly. The triangles also give a puzzle effect this represents the way a relationship is built. Both man and woman have to adapt in order to make a relationship work. The heavy materials (rubber and canvas textile) combined with the delicate movement results in an attractive masculine yet subtle design.

2 Societal impact

With the help of demonstrators like The Butterfly Effect we hope to inspire designers and technologists to explore and develop richer interactions via activated products. We try to help developing a dynamic language for this hardly researched field of activated wearables. And we put a lot of effort in thinking about the (long term) impact of concepts on itself for users and society. That is why we appreciate the societal thoughts behind
this concept. More research is needed to validate the impact on personal and societal level for the specific target group and their surrounding.

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References

Fig. 6. Demonstrator as the complete product: sensor and activator integrated.