

Measuring Mobile Emotions: Measuring the Impossible?

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ABSTRACT

Emotions as such is a research topic with a lot of coverage in various domains (neuroscience, psychology, medicine, criminology and more recently in user experience research). This workshop addresses multidisciplinary approaches, discussing ways of implementing mobile research about emotions. Particularly, this workshop aims to improve the assessment of emotions in the mobile context of field research. The workshop addresses particularly the state-of-the-art in emotion measurement and investigates the possibilities to apply and adopt these methods in the field of mobile HCI.

Categories and Subject Descriptors

H.5.2. [User Interfaces]: Evaluation/methodology.

General Terms

Measurement, Human Factors.

Keywords

Emotions, user experience, mobile measurement, physiology, mobile evaluation methods.

1. GOALS OF THE WORKSHOP

Generally, emotions have obtained interest in many research domains including neuroscience, psychology, and medicine and product design. It has also acquired interest in the computer science and HCI domain [1,3,4,7,8].

As the relevance of user experience is made more and more clear, researchers in the field have realized that the user's interpretation of interaction with mobile systems such as the physical mobile devices as well as mobile (location-based) services is an important measure for the success or demise of further interaction [2,6]. The question remains what shapes this interpretation and how can it be revealed?

Emotions involve past experiences, present experiences and a direct connection to the specific human-computer interaction at that moment where contextual factors such as motivation,

surroundings and social setting play a direct role and affect which kind of emotion can be triggered through interaction, and as such are a vital part of the mobile user experience [5]. This leads directly to the question of located measurement of emotions: Observational analysis, interviews and questionnaires can be supported by different physiological measurement methods such as galvanic skin response, heart rate (variability), facial (muscle) analysis or pupil diameter. The advantages of some of these methods are that they can be used in real-time settings to collect quantitative and objective data simultaneously, but suffer from the challenge of interpretation of the physiological correlates associated with emotions. A second large challenge lies in the portability of the available solutions and their applicability in the field (which are the most interesting, real, settings!). Indeed, there are possibilities to model emotions of human beings while on-the-move, using an "affect glove" or similar approaches. Still, active emotion research is mostly done in the laboratory as the data extracted requires a monitoring of the situational context to assess the measured emotions. In our research we are investigating the issue of combining qualitative interpretative accounts with quantitative physiological measurements in field settings to improve the accuracy towards user experience research factors.

There are many ways in which knowledge about emotions can be utilized for improving interaction experiences, both directly and indirectly. *Direct utilization* of emotion measurement takes form in the affective computing domain [5]. Changing an interaction pattern because a user is aroused can influence subsequent interactions and give the user a more positive experience about the whole interaction.

Indirect utilization of emotion measurements relates to emotion measurement for the improvement of designs and interactions, for which we need to understand users' emotional interpretation of interactions which is the main topic of this workshop. Such knowledge improves our fundamental capabilities of designing optimal interactions and requires different methodologies. Instead of focusing on real-time analysis, we are also interested in understanding a palette of emotions as rich as possible to facilitate the analysis of emotions in mobile settings.

An intrusive laboratory setting changes the way interactions are experienced fundamentally, so research is targeted at developing methods that can be applied in the context in which products or technology is actually used, for example, at home, in the office or, for mobile applications, in any use case with varying conditions. This workshop goes beyond laboratory settings to focus on the assessment of emotions in the context of mobile services.

2. OBJECTIVES

This workshop aims at combining knowledge from the various approaches for measuring emotions in real-life mobile situations, where challenges are even more burdensome. Specifically, the workshop addresses:

- Bring together researchers from different fields and communities that deal with emotion research to get a multidisciplinary view of this topic and learn from each other's approaches
- Assess potentials and barriers of emotion measurement in the field
- Problems, challenges, advantages and ethical aspects of measuring emotions for mobile user experience research.
- Establishment of a multidisciplinary community for future discussion and exploration of this topic that deals with the same standards concerning mobile physiological measurement methods, terminology, statistical analysis and interpretation.
- Emotion measurement in real life settings, field trials and mobile settings and different contextual characteristics. Participants share their experience about ambulatory physiological measurements to improve current findings and to consider other state-of-the-art measurement methods that support emotion and user experience research.

3. ACCEPTED PAPERS

The following papers have been accepted for presentation during the workshop:

- *Guidelines for Mobile Emotion Measurement* (Joris H. Janssen and Egon L. van den Broek)
- *Emotion Recognition on the Go: Providing Personalized Services Based on Emotional States* (Syed Shahbaz Hussain and Christian Peter)
- *Measurement station for recording of different biosignals to detect emotions under mobile conditions* (Wigand Poppendieck, Roman Ruff, Eduardo Fernández and Klaus-Peter Hoffmann)
- *MOLMOD: Analysis of Feelings based on Vital Information for Mood Acquisition* (Jumpei Yamamoto and Mizuki Kawazoe)
- *A Multimethod Approach for Measuring Media Experiences* (Annika Wiklund-Engblom, Anette Bengs and Susanne Sperring)
- *Persuasion, Dialog, Emotion and Prosody* (Jaime C. Acosta)
- *Combining Worthless Sensors* (Cornelia Setz, Johannes Schumm, Claudia Lorenz, Bert Arnrich and Gerhard Tröster)
- *Utilizing Emoticons on Mobile Devices within ESM studies to Measure Emotions in the Field* (Alexander Meschtscherjakov, Astrid Weiss and Thomas Scherndl)
- *Possibilities of Psychophysiological Methods for Measuring Emotional Aspects in Mobile Contexts* (Eva Ganglbauer, Johann Schrammel, Arjan Geven and Manfred Tscheligi)

4. OUTPUTS OF THE WORKSHOP

During the workshop a poster is produced in order to present a summary of the results at the conference poster session. After the workshop the accepted papers will be made available on the website, the summarized results of the workshop will be published and further discussion about the topic is stimulated in a wider audience. The workshop organizers will consider, after the workshop, the publication of a revised version of the papers presented as a special issue of a journal such as *Interacting with Computers*, *Human-Computer Interaction*, *TOCHI* or *ACM Interactions Magazine*. We also consider follow-up workshop in upcoming conferences (e.g. *Design & Emotion 2010*, *MobileHCI2010*) as well as further devoted sessions organized by the MINET project.

5. Organizers' backgrounds

Manfred Tscheligi is professor for Human-Computer Interaction & Usability at the University of Salzburg. He is a member of different expert groups and very active in the international research scene. He was General Conference Co-Chair of CHI2004, chair of MobileHCI 2005, co-chair of ACE 2007 chair of EuroITV2008 and is currently co-chairing AMI09. He was also member of the editorial board and special column editor of the ACM Interactions magazine. He has been involved in several workshop organization activities (recently ACE07, MobileHCI07, CHI2008, AMI2008).

Lucas Noldus is founder and director of Noldus Information Technology, a developer of software tools and integrated solutions for the study of behavior and human-computer interaction. He has authored numerous peer-reviewed papers and conference presentations about methods and techniques in behavioral research. He has taught tutorials and courses about this topic at e.g. CHI2004, CHI2005, CHI2006, CHI2007, HCI International 2007.

Arjan Geven works as research coordinator at CURE – Center for Usability Research and Engineering in Vienna. At CURE he investigates the topic of measurement of aspects of user experience in mobile contexts and has authored several papers presented at MobileHCI conferences. He is a participant in the European “Measuring the Impossible” Network with a focus on measurement of user experience factors.

6. ACKNOWLEDGEMENTS

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