ERM4CT 2015 – Workshop on Emotion Representations and Modelling for Companion Systems

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ABSTRACT

In this paper the organisers present a brief overview of the Workshop on Emotion Representation and Modelling for Companion Systems (ERM4CT). The ERM4CT 2015 Workshop is held in conjunction with the 17th ACM International Conference on Multimodal Interaction (ICMI 2015) taking place in Seattle, USA. The ERM4CT is the follow-up of three previous workshops on emotion modelling for affective human-computer interaction and companion systems. Apart from its usual focus on emotion representations and models, this year's ERM4HCI puts special emphasis on

Categories and Subject Descriptors

H.1.2 [**User/Machine Systems**]: Human factors, Human information processing; H.5 [**INFORMATION INTERFACES AND PRESENTATION**]: Multimedia Information Systems, User Interfaces

Keywords

Multimodality; Emotion Representation; Emotion Modelling; Human-Computer-Interaction; User Adaptation; Individualisation; Workshop; Summary

1. INTRODUCTION

The major goal in human computer interaction (HCI) research and applications is to improve the interaction between humans and computers. One way of achieving a better interaction is to allow the computer to recognise and respond to the user's natural behaviour shown during the interaction. However, user behaviour is often very specific to an individual and generally of multi-modal nature. Hence, the current trend of multi-modal user-adaptable HCI systems arose to address these issues. These HCI systems are designed as companions capable of assisting their users based on needs, preferences, personality characteristics and affective states. Companion systems are dependent on reliable emotion recognition methods in order to provide natural, user-centred interactions. However, the adequate incorporation of emotions in modern HCI systems has proved to be a challenging task.

Depending on the modalities used, the user model incorporated and the application scenario, varying difficulties in the emotion representations and modelling may arise. The ERM4CT Workshop is a joint-workshop of the 3^{rd} ERM4HCI and the 2^{nd} Techniques towards Companion Technologies (T2CT) Workshop aiming at highlighting the specific issues associated with the multi-modal emotion representations as needed in companion technologies.

The ERM4CT workshop focuses on emotion representations, signal characteristics describing and identifying emotions as well as the influence of emotion representations on personality and user state models incorporated in companion systems. The combination of the 3^{rd} ERM4HCI and the 2^{nd} T2CT workshop allows the in-depth analysis of technical prerequisites and modelling aspects as well as application specific issues associated with the development of affective, multi-modal, user-adapted systems.

Researchers are encouraged to discuss possible interdependencies of characteristics on an intra- and inter-modality level. Such interdependencies may occur if two characteristics are influenced by the same physiological change in the observed user and are especially relevant to multi-modal affective systems. The workshop aims at identifying a minimal set of characteristics needed to express emotions in multimodal corpora. Theoretical papers contributing to the un-

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derstanding of emotions in order to aid in the technical modelling of emotions for companion systems are also welcomed. The workshop supports discussions on the necessary prerequisites for consistent emotion representations in multi-modal companion systems.

The ERM4CT workshop complements the ICMI 2015 by offering a platform on emotion representation and modelling in multi-modal companion systems. Providing this forum on emotion representations, models and implementations in modern companion technologies encourages researchers from all disciplines to exchange on the topic and improve their models and understanding of affective HCI through interdisciplinary discourse. The main topics of the workshop are:

- Personality models and incorporated emotion models
- Multimodal aspects of emotion recognition, representation and identification
- Physiological background of emotion representations
- Feature selection for emotion recognition
- Interdependencies of emotion recognition features
- Minimal (multimodal) feature sets
- Approaches to the interoperability of emotion models
- Timing in multimodal emotion recognition scenarios
- Confidence metrics for emotion recognition/classification
- Prerequisites for the consistent modelling of emotions in companion systems
- Relationship between general user states and emotion recognition features
- User state specific emotion and disposition modelling
- Multi-modal emotion and disposition recognition
- Modality interactions and dependencies
- System response pattern for companion technologies
- System response perceptions within companions
- Companion technology application scenarios

2. HISTORY OF THE WORKSHOP

The first ERM4HCI[1] took place at the ICMI 2013 in Sydney, Australia. The ERM4HCI 2013 was the first workshop to focus on the interdisciplinary exchange and understanding of emotion models as used in different disciplines, application scenarios and systems. The organisers of the ERM4HCI 2013 had observed that emotion representations and models are often modality, discipline and data specific and hence hardly interoperable. The workshop organisers wished to encourage the discussion of both technical and theoretical approaches to emotion modelling and representations in order to aid in the development of efficient, verifiable and interoperable emotion models for affective systems. The workshop was successfully repeated at the ICMI 2014. The T2CT 2013 was the first workshop to provide a platform to discuss the progress on developing companion-like systems. These systems are adaptable to the user's situation, intentions, needs, and affective states. The T2CT 2013 showed that open research questions in the area are especially the recognition of user states and the adaptability of software agents to the recognised state. The necessity of reliable emotion, affect and disposition recognition methods became immanent. The T2CT offers researchers a platform for the interdisciplinary exchange on aspects associated with the development and application of multi-modal, affective HCI systems capable of integrating themselves in the user's everyday life as technical companions.

ERM4CT 2015 continues to promote the research on emotion representations and modelling in multi-modal affective HCI systems, with a special focus on companion technologies and their applications. The ERM4CT allows researchers to exchange on models used in affective HCI and the special needs of companion technologies. The aim is to allow an advanced exchange on the possibilities and difficulties in emotion, affect and disposition recognition for companion-like systems and applications.

Based on the discussions during previous workshops we felt that it is time to improve the exchange between the two events. In terms of research the communities work interdisciplinary and influence each other. Further, we have seen that the usual attendees of ERM4HCI and T2CT contributed to both workshops. To emphasize the link between the communities the organizer's decided to join the 3rd ERM4HCI and the 2nd T2CT to form the ERM4CT. The ERM4CT allows us to offer an international platform on multi-modal emotion modelling and recognition for companion systems.

3. ORGANISERS, PROGRAM COMMITTEE, AND REMARKS

3.1 Workshop Organisers

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Albert Ali Salah, Boğaziçi University, Turkey
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3.2 Program Committee

Roman Bednarik, University Eastern Finland, Finland
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Nadia Bianchi-Berthouze, University College London, UK
Nick Campbell, Trinity College Dublin
Marc Cavazza, Teesside University, UK
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Jürgen Trouvain, Saarland University, Germany
Khiet Truong, University Twente, The Netherlands
Michel Valstar, University Nottingham, UK

3.3 Review Process

All accepted papers received at least two double-blind reviews. For this, we would like to thank all PC members for their time and helpful contributions.

[1] http://erm4hci.kognitivesysteme.de/index.html