Special Issue on Emotion and Computing

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What could be emotional about computers and software? What is the link between the two main words in the title of this issue: Emotion and Computing?

With the growing importance of computer based social networks the linguistic notion of emotion may have a new interpretation in this context. In fact, the role of emotion in artificial intelligence research still has a different focus. The main fields of emotion research are emotion recognition, emotion modeling and the generation of emotional user interfaces.

Since AI often likes to refer to the role model “human being”, it seems to be a good idea to have a closer look at the role of emotion in humans, their way of thinking and their way of acting. Especially the social interactions of humans show the importance of emotions. An appropriate reaction on a conversational partner seems to be hardly possible without the ability of catching the emotional cues sent out by the other person in parallel to the spoken words. And, on the other hand, when trying to convince someone, it’s very helpful to add emotional non-verbal signals to the message sent.

Apart from communication issues, it is generally accepted that emotions play a key role in decision making and learning processes of a human being. Since these subjects have always been key areas of artificial intelligence research, the importance of emotion in these processes cannot be ignored.

Fortunately, this issue has not been ignored at all in the last years. From 2004 to 2007 the European Network of Excellence HUMAINE (HUMAN-Machine Interaction Net-

work on Emotions) was the main platform for the issue of emotion in computing in Europe.

After 2007 this network became the basis for the foundation of the HUMAINE Association, a world-wide association for researchers in emotion-oriented computing.

The research on emotional or affective computing made very clear that this is a highly interdisciplinary field combining several fields of computer science, artificial intelligence, social science research and psychology as well as biology and neuroscience.

In an interview for the special issue “Emotion and Computing”, Jonathan Gratch, president of the HUMAINE association, points out that the guiding metaphor for emotion research is the concept of “human centered computing”.

The computer should be able to better understand and react on the user’s needs. So it’s rather not the only and central issue that emotion research intends to imitate the cognitive processes of a human being.

This special issue on Emotion and Computing provides an insight in current work on emotional aspects in speech recognition, the special aspect of modeling empathy in a virtual agent and how to make virtual agents seem realistic and adds as a third topic a neuroscientific view on emotions.

In addition to the main research results presented here, two project presentations are added, which give an overview on emotional aspects in android science and a framework for social signal interpretation. To complete the work presented in this special issue, a summary of the PhD-Thesis of Stefan Rank on models of affective behavior is given.

Finally, we are very happy to include an interview with one of the best known researchers and pioneers in the field, Rosalind Picard, director of the Affective Computing Research Group at the MIT Media Lab.

The field of emotion research is of course much wider than the few aspects that can be presented in the special issue

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of this journal. Nevertheless, I believe we have a very good selection of research work to give an adequate overview.

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1 Content

1.1 Fachbeiträge

- Empathy-Based Emotional Alignment for a Virtual Human: A Three-Step Approach
Hana Boukricha, Ipke Wachsmuth
- Designing Emotions: An Empirical Approach to Realistic Affect Simulation
Michael Kipp, Thomas Dackweiler, Patrick Gebhard
- An Evaluation of Emotion Units and Feature Types for Real-Time Speech Emotion Recognition
Thurid Vogt, Elisabeth André
- Computational Assessment of Interest in Speech—Facing the Real-Life Challenge
Martin Woellmer, Felix Weninger, Florian Eyben, Bjoern Schuller
- A Neuroscientific View on the Role of Emotions for Artificial Intelligence
Julien Vitay, Fred H. Hamker

1.2 Projekte

- Affective Computing Combined with Android Science
Christian Becker-Asano
- Social Signal Interpretation (SSI): A Framework for Real-Time Sensing of Affective and Social Signals
Johannes Wagner, Florian Lingenfelser, Nikolaus Bee, Elisabeth André

1.3 Interview

- “Interview with Rosalind Picard”
- “Interview with Jonathan Gratch”

1.4 Dissertation

- Behaviour Coordination for Models of Affective Behaviour
Stefan Rank

2 Emotion and Computing—Service

In the following a number of projects, organizations, conferences and workshops is listed, which are directly linked to the field of emotion and computing and provide the platforms for scientific work.

2.1 Projects and Organizations

- HUMAINE Association, <http://emotion-research.net/>
- SEMAINE, <http://www.semaine-project.eu/>

2.2 Journal

- IEEE Transactions on Affective Computing, <http://www.computer.org/portal/web/tac>

2.3 Conferences

- ACII—Affective Computing and Intelligent Interaction, <http://www.acii2011.org/>
- IVA—International Conference on Intelligent Virtual Agents, <http://iva2011.ru.is/>

2.4 Workshops

- Interspeech 2011 Speaker State Challenge, <http://emotion-research.net/sigs/speech-sig/is11-speaker-state-challenge>

Emotion and Computing—Current Research and Future Impact, 5th workshop, within: KI 2011

<http://www.emotion-and-computing.de>