

Emotions in Cognition, Adaptive Behavior and Action Selection

Organizers: Joost Broekens, Lola Cañamero

Affective computing has recently shown much interest in emotion (affect) detection and emotion (affect) expression through virtual agent or robot embodiments. However, the computational study of one of the main functions of emotions in animals, that is, *to influence and inform the action selection process in a way that facilitates behavioral adaptation*, remains underrepresented. Research in neuroscience and psychology shows that emotions influence thought and action, as stressed by the many theories that emphasize the links between emotion, cognition and action. Also the adaptive behavior, robotics and cognitive modelling communities feature this type of work. Several recent workshops and special issues (Lorentz Workshop on Emotions as Feedback Signals 2016¹, IROS 2015 workshop on Grounding Emotions Autonomy², Special Issue in Adaptive Behavior Oct 2016³, the Computational Modelling of Emotion Symposium at AISB17⁴) show that there is recent interest in this area. We believe the different communities can benefit from each other and that this work needs to be present at ACII. This special session at ACII 2017 is a promising opportunity to do so. Collaboration and integration of research efforts is important for a better understanding of the interplay between emotion and cognition on a theoretical level through computational modeling, and, for the development of computational models of emotion, cognition and action selection to enable more realistic and more adaptive agents and robots. For example, a robot that learns behavior by using the emotional (and other social) signals of the user as reward signal could help human-robot interaction in the wild. Also, better user models can be developed if we understand how to model the influences of emotions on beliefs. We encourage you to submit your work!

Topics (indication, not limited to):

- *Emotion elicitation and grounding*
 - Cognitive-affective architectures.
 - Emotion and reinforcement learning
 - Embodiment and situatedness of emotions
- *Emotion effects*
 - Affective influences on cognition and adaptation.
 - Emotions as heuristics in cognition and action selection
 - Emotions, goals and motivation
- *Emotion models impact*
 - Domain specific versus domain independent models of emotion
 - Model validation and benchmarks (e.g., validated scenarios with affective consequences)
 - Interplay between computational model and emotion theory

¹ <https://www.lorentzcenter.nl/lc/web/2016/794/info.php3?wsid=794>

² <http://cognitionreversed.com/iros-emotion-workshop/>

³ <http://adb.sagepub.com/content/24/5/263.short>

⁴ <http://www.cs.bham.ac.uk/~ddp/aisb17cme/>

Utilising Big Unlabelled and Unmatched Data for Affective Computing

Organizers: Hesam Sagha, Zixing Zhang, Florian Metze, Björn Schuller

There has been lots of research toward affect recognition through different modalities such as speech, video, and text. Despite these great efforts, the performed analyses are often limited to small collected datasets which consequently makes generated models barely generalisable to other recording scenarios. This lack of 'big' labelled data for affective computing hampers creating deep models, which have proved their substantial effectiveness, so far, mostly in related fields such as speech and video recognition. Thanks to the popularity of social multimedia, collecting audiovisual and textual data has become a somewhat easy task. Nonetheless, labeling such data demands a huge amount of (expert) human work, which can be expensive and time-consuming. Additionally, collected data may not have high quality and therefore, may not be sufficiently reliable to be used for training a model. Furthermore, collected data from different sources may be highly dissimilar, which can also lead to performance degradation. Therefore, in this special session, we seek approaches that aim to increase the number of reliable labelled data with less human effort as well as to match data distributions between labelled and un- or partially-labelled corpora. This will be a crucial step to lead Affective Computing to industrial level and bring related everyday applications into real life. For further details see <https://sites.google.com/view/acii17ubuudac/accueil>

Topics (indication, not limited to):

- semi-supervised learning and active learning
- zero resource technologies, as unsupervised learning
- transfer learning for domain/model adaptation
- using weak labels and co-training
- crowdsourcing for collecting and annotation large-scale data
- affective data augmentation and synthesis
- reinforcement learning
- cloud/distributed computing algorithms for big affective data
- applications (such as cross-language cross-cultural adaptation, cross-modality transfer learning, ...)

Brain and physiological signals for multi-users modeling

Organizers: Guillaume Chanel, Christian Mühl, Jérémy Frey, Anton Nijholt

Emotional cues, generated subconsciously by the human body, have always been a crucial part of affective computing. Although emotions can be viewed as a social phenomenon, current physiological computing research is focused on emotions which are triggered by non-social stimuli. In the case of group interactions, emotions do not only develop in one's mind but rather unfold according to the emotional expressions of the others. Consequently, the behavior, expressions, brain activity and physiology of interacting people are known to be inter-dependent during interactions. This inter-dependency can in turn predict several properties of the social interactions such as grounding, mutual understanding, conflict, or social presence.

With this special session we would like to develop research on multi-users' modeling from neural and physiological sources. Here the concept of user modeling is defined broadly, including emotional,

cognitive and social aspects which can be used for intelligent interactions. This special session targets researchers from computer science, neuro-science and psycho-physiology who are interested in the following research topics:

- Collaborative brain-computer interfaces
- Tangible / social display of physiological and neural cues
- Social bio-feedback
- Assessment of social processes (conflict, empathy, relationship etc.)
- Assessment of the quality of interaction and collaboration
- Social neuro-science and psycho-physiology
- Emotion assessment, particularly social emotions
- Domain and transfer learning for building cross-participant models
- Methods for multiple user modeling (e.g. synchrony measures, dynamic multi-users' models, etc.)
- Applications of multi-user physiological computing

To facilitate the research on physiological signal classification, several databases are publicly available. Contributions on the physiological data available in such databases are welcome but not obliged. Example databases include:

- EATMINT: <https://eatmint.unige.ch>
- RECOLA: <https://diuf.unifr.ch/diva/recola>
- MMDB: <http://www.cbi.gatech.edu/mmdb/>

Those databases are only examples and work on self-collected or other data are welcome.

Special session website: <http://www.affective-sciences.org/en/bps-mum>