AVEC'15 Keynote Talk - From Facial Expression Analysis to Multimodal Mood Analysis

Roland Göcke
Professor of Affective Computing
University of Canberra, Canberra, Australia
roland.goecke@ieee.org

ABSTRACT

In this talk, I will give an overview of our research into developing multimodal technology that analyses the affective state and more broadly behaviour of humans. Such technology is useful for a number of applications, with applications in healthcare, e.g. mental health disorders, being a particular focus for us. Depression and other mood disorders are common and disabling disorders. Their impact on individuals and families is profound. The WHO Global Burden of Disease reports quantify depression as the leading cause of disability worldwide. Despite the high prevalence, current clinical practice depends almost exclusively on self-report and clinical opinion, risking a range of subjective biases. There currently exist no laboratory-based measures of illness expression, course and recovery, and no objective markers of end-points for interventions in both clinical and research settings. Using a multimodal analysis of facial expressions and movements, body posture, head movements as well as vocal expressions, we are developing affective sensing technology that supports clinicians in the diagnosis and monitoring of treatment progress. Encouraging results from a recently completed pilot study demonstrate that this approach can achieve over 90% agreement with clinical assessment. After more than eight years of research, I will also talk about the lessons learnt in this project, such as measuring spontaneous expressions of affect, subtle expressions, and affect intensity using multimodal approaches. We are currently extending this line of research to other disorders such as anxiety, post-traumatic stress disorder, dementia and autism spectrum disorders. In particular for the latter, a natural progression is to analyse dyadic and group social interactions. At the core of our research is a focus on robust approaches that can work in real-world environments.

Categories and Subject Descriptors
J.3 LIFE AND MEDICAL SCIENCES; I.4 IMAGE PROCESSING AND COMPUTER VISION; I.4.9 Applications

Keywords
Affective computing, affect analysis, depression

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BIO

Prof Roland Goecke is Professor of Affective Computing at the Faculty of Education, Science, Technology and Engineering, University of Canberra, Australia. He is the Head of the Vision and Sensing Group and the Director of the Human-Centred Technology Research Centre. He received his Masters degree in Computer Science from the University of Rostock, Germany, in 1998 and his PhD in Computer Science from the Australian National University, Canberra, Australia, in 2004. Before joining UC in December 2008, Prof Goecke worked as a Senior Research Scientist with Seeing Machines, as a Researcher at the NICTA Canberra Research Labs, and as a Research Fellow at the Fraunhofer Institutes for Computer Graphics, Germany. His research interests are in affective computing, pattern recognition, computer vision, human-computer interaction, multimodal signal processing and e-research. Prof Goecke has been an author and co-author of more than 120 peer-reviewed publications. His research has been funded by grants from the Australian Research Council (ARC), the National Health and Medical Research Council (NHMRC), the National Science Foundation (NSF, USA), the Australian National Data Service (ANDS) and the National eResearch Collaboration Tools and Resources project (NeCTAR).