Tom Gedeon
Research School of Computer Science
Australian National University, Canberra

Topic: **Affective Computing Beyond Computer Vision**

Abstract:

We can define Affective Computing as the study and development of systems and devices that can recognize, interpret, process, and simulate human feelings and emotions. There are two traditional ways this kind of work has been done: 1) by computer vision algorithms running on image or video data of people showing emotions with the task of detecting that emotion; 2) attaching sensors to or pointing sensors at people showing emotions, and again detecting that emotion. Both approaches have problems, computer vision approaches need very large amounts of well-labelled data, while it is impossible to attach sensors when the event is past and all we have are the images / video.

My Human Centred Computing group at the Australian National University has pioneered a third way. We attach sensors or point sensors at people who are watching or *observing* the images / video. With this approach, we have can achieve state of the art results for smile veracity (95%, same as the best CV approach), which is readily transferrable to e.g. anger veracity with minor effort (impossible for the CV approach without a huge carefully curated and feature engineered dataset). I provide a number of other examples of work we have done and which is currently in progress.

Bio:

Tom Gedeon is Chair Professor of Computer Science at the Australian National University. He is formerly Deputy Dean and Head of Computer Science at ANU. His BSc and PhD are from the University of Western Australia, and Grad Dip Management from UNSW. He is twice a former President of the Asia-Pacific Neural Network Assembly, and former President of the Computing Research and Education Association of Australasia. He is currently a member of the Australian Research Council's College of Experts. He is an associate editor IEEE Transactions on Fuzzy Systems, and the INNS/Elsevier journal Neural Networks.

Tom's research focuses on bio-inspired computing (mainly neural, deep learning, fuzzy and evolutionary) and human centred computing (mainly eye gaze, wearable physiological signals, fNIRS, thermal, EEG) to construct truly responsive computer systems (biometrics and affective computing) and humanly useful information resources (hierarchical and time series knowledge), industrial (mining, defence) and social good (medical, educational) applications.