Preface for special issue on “Emotional intelligence and ambient intelligence”

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Published online: 10 February 2012
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In psychology, emotion that reflects the genuine inner feeling of a person experiencing encounters is shown to be a major index in the evaluation of cognition, behavior, and social skills. Emotion is also one source controlling the learning efficiency in education, and one of essential elements in realizing smart interaction for a computer. Thus, emotional intelligence, which is defined as the capability to be able to perceive, to assess and to manage emotions of one's self or others emotion is attracting its attention in psychology cognition, education, and machine intelligence for achieving ambient intelligence.

Understanding one's emotion can be achieved from several observations, including facial expression, voice expression, and physiological signals. Emotion revealing is affected by culture and personal characteristics; therefore, detection/understanding human emotion is highly challenging. On the other hand, how and why emotion affects human mental states and reactions is still a mystery. All of these are major issues for realizing an emotional intelligence smart environment.

The goal of this special issue is to provide a forum for bringing the experts from cross disciplinary to address the emerging topic of emotional intelligence. After rigorous reviewing and accurate revision, seven papers were selected for publication. Tan et al. applied two bipolar

facial electromyography (EMG) channels over corrugator supercilii and zygomaticus for differentiating the emotional states visual stimuli in the valence arousal dimensions. Experimental results show that corrugator EMG and zygomaticus EMG efficiently differentiated negative and positive emotions. Lee et al. developed a regularized discriminant analysis (RDA)-based boosting algorithm, and applied it on the facial emotion recognition. The small sample size and ill-posed problems suffered from QDA and LDA was resolved in the paper through a regularization technique. They also used a particle swarm optimization (PSO) algorithm to estimate optimal parameters in RDA. Lin et al. constructed an extensible lexicon and use semantic clues to analyze the emotions of sentences posted on the Plurk website. A support vector machine is applied to classify the emotions. Cerezo et al. proposed a facial affect recognizer to sense emotions from users' facial image. Five classifiers were integrated to identify emotions. In addition, a Kalman filtering technique was applied to ensure the temporal consistency and increase the robustness. Chi et al. investigates a clean train/noisy test scenario to simulate practical conditions with unknown noisy sources. They extracted statistics of joint spectro-temporal modulation features from an auditory perceptual model for the detection of the emotion status of the speech samples which are corrupted with white and babble noise under various SNR levels. Ana et al. built a virtual pet by using the Ortony, Clore and Collins' (OCC) theory to implement a cognitive structure. The methodology starts from developing a Behavior Cognitive Task Analysis (BCTA) to elucidate the components necessary to simulate behaviors and mental models of virtual pets. In particular, the Fuzzy C-Mean (FCM) is also proposed to map interaction between elements in the emotion model. Fu et al. proposed a TV-

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based information service system, ETVNetSers, to offer family communication, social interaction, aged entertainment, health service and home care service, for the elders. In order to show how to sense the mental requirement of the elders in daily living and to offer information services dedicated to the elders, the elderly LOHAS Index (ELI) is proposed to evaluate the happiness and wellbeing of the elders.

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Journal of Ambient Intelligence & Humanized Computing