Abstract

Emotion recognition is an important aspect of *Affective Computing*. Emotion detection is currently an active research area and is necessary for developing affective, conversational interfaces. Human intellect cannot work at its best without emotional intelligence. Artificial agents, when rendered with emotion recognition can perform tasks in a more intelligent manner. Exploratory experiments were performed to articulate nature of specific behavior of a human being using artificial automata or computer simulated models. Artificial agents can be endowed with emotions so that they can be used as a test-bed for theories of emotions, providing a synthetic approach that is complementary to the analytical study of natural systems. This research work is an attempt to conceptualize the above idea. It deals with the development of an intelligent agent for automatic recognition of emotions from text-based events. The approach chosen is *Soft Computing* and the architecture used is a Neuro-Fuzzy system. The system accepts a text-based real life event as an input. The string is divided into tokens using a tokenizer. The tokens are then compared to a standard corpus (i.e., WordNet-Affect) of emotional keywords using the Knuth-Morris-Pratt pattern matching algorithm. The emotional weights of the matching tokens are computed using the emotional values and the frequency of the emotional keyword. The valence of the word is decided based on the polarity. The values of emotional weight and polarity are then processed by a Neuro-Fuzzy Controller, which then generates the emotion underlying the event. The system considers the six basic emotions namely, *Happiness, Despair, Disgust, Fear, Anger and Surprise*. From the functional point of view the system performs a recognition task and a training task. The controller is trained to generate correct output through the backpropagation algorithm.

The processing logic of the proposed system is implemented using JAVA on Windows XP platform. For mathematical analysis of the system, MATLAB 7.0 is used. Besides, the Fuzzy Inference System generated using MATLAB supplements the system developed using JAVA. The system is tested with several sample events related to the above-said basic emotions and the observed results are compared with the expected results recorded from the feedback of Annotators. The performance of the system is graded based on the comparative study in "Attribute Agreement Analysis" of MINITAB16 (statistical software) and using measures of *Precision* and *Accuracy*