Objectives

- To create Instant Messaging (IM) integrated with affect recognition system capable of recognition of emotions and communicative behavior conveyed through online text messages
- To provide vivid and expressive visualization of sensed information by avatar to enhance socially oriented online communication media

Approach

In order to automatically represent a user’s affect and social nonverbal behavior in an IM system, we developed AffectIM with 2D avatars (graphical representations of users). Animations of avatar expressive patterns are driven by the output of the developed Affect Analysis Model designed to handle not only correctly written text, but also informal messages written in abbreviated or expressive manner.

Principles of Affect Analysis Model

Working flow of Affect Analysis Model

Categories defined for Affect Analysis Model:


Affect Database

Emotion category labels and numerical values of intensity (0.0 – 1.0) are manually assigned to affect-related entries of the Affect Database by three independent annotators.

Word-level analysis module

Phrase-level analysis module

Affect DB

Text for emoticons, abbreviations, acronyms, interjections, ‘?’ and ‘!’ marks, repeated punctuation and capital letters

Emotions or emot. abbrev. ‘yes’ or ‘no’

Sentence pre-processing for parser

Sentence-level analysis module

Emotion category and intensity, vector of communicative functions

Animation engine

We have developed AffectIM integrated with the Affect Analysis Model. Designed 2D animated avatars are endowed with the ability to express emotions and play nonverbal social behavior, on the basis of textual affect sensing and interpretation of communicative functions conveyed by online conversations. The system allows users to see the conversation flow in three modes (plain text, transcribed text, or text annotated with emotion), and provides the user of AffectIM with the possibility to add new abbreviations, acronyms, and emoticons to the Affect database. Animation engine decides the sequence of avatar animations and their duration depending on sentence length, intensity of dominant emotion, personality type of a user, and ‘overall mood’ of a conversation.

Emotional states and relevant expressive means

AffectIM allows colorful visualization of emotion distribution and dynamics throughout the conversation.

Emotion distribution and dynamics

AffectIM integrates with the Affect Analysis Model. Designed 2D animated avatars are endowed with the ability to express emotions and play nonverbal social behavior, on the basis of textual affect sensing and interpretation of communicative functions conveyed by online conversations. The system allows users to see the conversation flow in three modes (plain text, transcribed text, or text annotated with emotion). The user of AffectIM can choose one of two modes: 'greeting', 'thanks', 'posing a question', 'congratulation', 'farewell' or 'overall mood' of a conversation.

AffectIM – Emotionally Intelligent IM

In the virtual communities, “you can’t kiss anybody and nobody can punch you in the nose, but a lot can happen within those boundaries. To the millions who have been drawn into it, the richness and vitality of computer-linked cultures is attractive, even addictive.” (Howard Rheingold, 1993)