ASIAGRAPH 2009 PROCEEDINGS

iFeel_IM!: オンラインコミュニケーションにおける感情増幅のための着用型触感提示システム

iFeel_IM!: Affective Haptic Garment for Emotion Enhancement during Online Communication

ティエティエルコブ　ズミトリー/東京大学 情報理工学系研究科システム情報学専攻，ネビアロスカヤ　アレナ/東京大学 情報理工学系研究科電子情報学専攻，プレンディンガー　ヘルムト/国立情報学研究所 コンテンツ科学研究系，川上　直樹/東京大学 情報理工学系研究科，石塚　満/東京大学 情報理工学系研究科電子情報学専攻，舘　暲/慶應義塾大 メデイアデザイン研究科

Dzmitry Tsetserukou[1]/Department of Information Physics and Computing, University of Tokyo, Alena Neviarouskaya/Department of Information and Communication Engineering, University of Tokyo, Helmut Prendinger/ Digital Content and Media Sciences Research Division, National Institute of Informatics, Naoki Kawakami/ Dept. of Information Physics and Computing, University of Tokyo, Mitsuru Ishizuka/ Department of Information and Communication Engineering, University of Tokyo, Susumu Tachi/ Graduate School of Media Design, Keio University

*[1]dima_teterukov@ipc.i.u-tokyo.ac.jp

Abstract: The work focuses on a novel system iFeel_IM! that integrates 3D virtual world Second Life, intelligent component for automatic emotion recognition from text messages, and innovative affective haptic interfaces providing additional nonverbal communication channels through simulation of emotional feedback and social touch (physical co-presence).

Keywords: Affective haptics, affective user interface, wearable devices, virtual reality, communication in virtual world.

1. iFeel_IM! System with Haptic Devices

Driven by the motivation to enhance social interactivity and emotionally immersive experience of real-time messaging, we pioneered in the idea of reinforcing (intensifying) own feelings and reproducing (simulating) the emotions felt by the partner through specially designed system, iFeel_IM! (Fig. 1). The philosophy behind the iFeel_IM! (**i**ntelligent system for **Feel**ing enhancement powered by affect sensitive **I**nstant **M**essenger) is "***I feel*** [therefore] ***I am!***".

In the iFeel_IM! system, great importance is placed on the automatic sensing of emotions conveyed through textual messages in 3D virtual world Second Life, the visualization of the detected emotions by avatars in virtual environment, enhancement of user's affective state, and reproduction of feeling of social touch (e.g., hug) by means of haptic stimulation in a real world.

In order to communicate through iFeel_IM! system, users have to wear innovative affective haptic devices (Fig. 2) developed by us. They make up three groups. First group is intended for emotion elicitation implicitly (HaptiHeart, HaptiButterfly, HaptiTemper, and HaptiShiver), second type evokes affect in a direct way (HaptiTickler), and third one uses sense of social touch (HaptiHug) for influencing on the mood and providing some sense of physical co-presence.

As a media for communication, we employ Second Life, which allows users to flexibly create their online identities (avatars) and to play various animations of avatars by typing special abbreviations in a chat window.

The control of the conversation is implemented through the Second Life object called EmoHeart attached to the avatar's chest. Once attached to the avatar, EmoHeart object (1) listens to each message of its owner, (2) sends it to the web-based interface of automatic emotion recognition from text, (3) receives the result (dominant emotion and intensity), and (4) visually reflects the sensed affective state through the animation of avatar's facial expression,

Figure 1: User communicating through iFeel_IM!

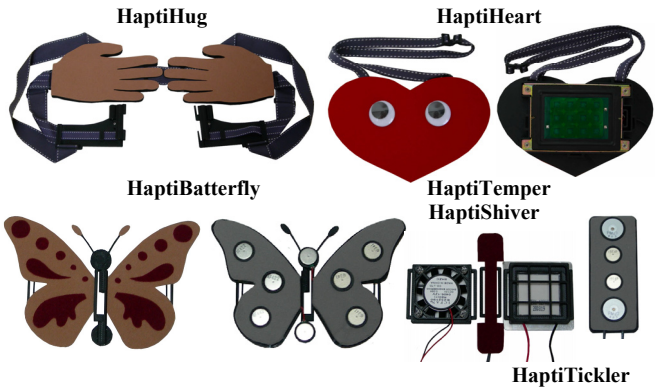

Figure 2: Affective haptic devices integrated into iFeel_IM!

EmoHeart texture (indicating the type of emotion), and size of the texture (indicating the strength of emotion, namely, 'low', 'middle', or 'high').

Based on the emotion detected from text, Haptic Device Controller activates corresponding affective haptic devices.