Calmate: Communication support system for couples using a calm avatar

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ABSTRACT

Many people find that communication between men and women is difficult regardless of their efforts to understand their partners. Especially, negative feelings cause troubles on communication of couple members. In this paper, we proposed a novel communication support system for couples that helps couple members share their negative feelings and heal over them smoothly using a physical avatar.

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ACM Classification Keywords   H5.m. Miscellaneous.

General Terms   Human Factors

INTRODUCTION

Many people often have troubles when they communicate with their partners. Some examples of these troubles are as following:

- My boyfriend suddenly becomes irritated. I am really confused by him.

- I sometimes lose control of my negative emotion, and get angry with my boyfriend without reason.

These troubles are caused by difficulty to share their feelings. Especially, they often have difficulty to share negative feelings since direct expression of negative feelings makes their partners just confused and disturbs smooth communication.

To solve this problem, we proposed a communication support system for couples using a physical avatar and smartphones. In this system, couple members can share their feelings *calmly* through a physical avatar shared among them.

CALMATE

The *Calmate (Calm + Mate)* is a novel communication support system for couples using a physical avatar: Two people in a relationship share the avatar(s) together and transmit their negative feelings to the partner calmly (Figure 1). The Calmate is designed with following concepts:

- Transmitting negative feelings easily

**Figure 1. The basic concept of the Calmate
A couple member can easily transmit his/her negative feeling and receive feedback from the partner in calm way through a physical avatar.**

- Expressing the feelings calmly

- Reacting to the feelings easily

- Fitting in daily environment

In first and third points, we apply the combination of a simple robot and smartphones for easy access both in local/remote environment.

In the second point, we design the movement of the robot simply and slowly not to disturb daily lives.

In the fourth point, we design a stuffed robot with soft material that fits in daily environment (e.g., living room or bed room).

SMILESNAIL

The SmileSnail is an implementation of the Calmate. We designed the SmileSnail as a snail-type stuffed robot because stuffed toys are familiar to many people and suited for daily environment. We applied the snail motif since snails move simply and slowly by nature and are suited for presenting information calmly.

Interaction

As shown in figure 2, users easily interact with the SmileSnail. For example, the male partner inputs his negative feeling by hanging its head down directly or by using his smart phone. Based on the input, the SmileSnail expresses the feeling by hanging its head down continuously. When his partner notices his negative feeling from the motion of the SmileSnail, and replies to it by shaking the robot or her smartphone. The SmileSnail swings its head to transmit her reply.
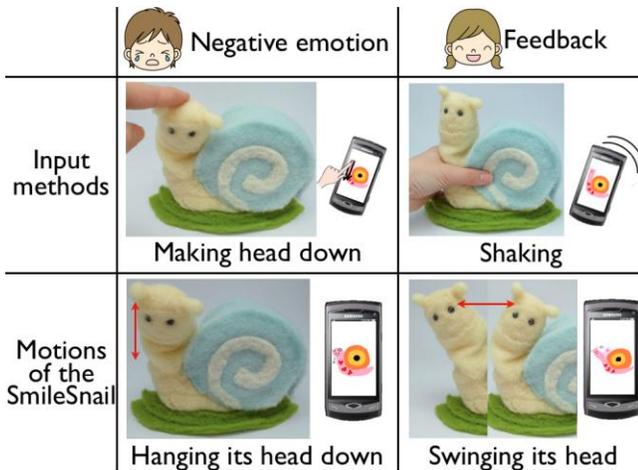
Figure 2. The basic usage of the SmileSnail

Figure 3. The prototype of the SmileSnail; The system swing the head by controlling wire 1 and 3; hang the head down/up with wire 2 and 4.

Although there are some automatic ways to detect the feelings, e.g., the expression recognition based on the image processing and the activity recognition using sensors, we chose an approach to manually input for the following two reasons. First, it is difficult to detect feelings accurately using the automatic ways. Second, although manual input requires greater effort by users, it may help keep the users motivated since that become useful for their communication.

Implementation

We developed the SmileSnail prototype as shown in figure 3. The SmileSail prototype is covered by felt to keep the soft appearance and feeling. The prototype consists of a body part and a shell part. The body part of the prototype basically consists of four muscle wires (BMX100: TOKI CORPORATION), a flexible code switch (CS102: Yamatake & Co., Ltd) and two joint parts. We selected the muscle wires as actuators since they are suited for slow/silent movement. Since the muscle wire is a quite simple actuator (it shrinks when the current is sent), we developed the original joint parts and put the muscle wires and the flexible switch through them to realize 2-axis movement: heading down/up and swinging (figure 3 left).

The shell part consists of a microcomputer (Arduino Uno) and surrounding circuit including an accelerometer. The microcomputer controls above sensors/actuators and communicated to the host PC via a USB. The host PC also works as a Web server and communicate with Android smartphones through the internet.

RELATED WORKS

There are a number of systems that support communication between couples separated by long distances. SyncDecor[1] supports communication between partners through the use of decor. A user can experience his/her partner's activities using pairs of remotely installed appliances that synchronize with each other. Lover's Cup[2] is a communication tool for long-distance couples using drinking-together interaction. Our system is unique to focus
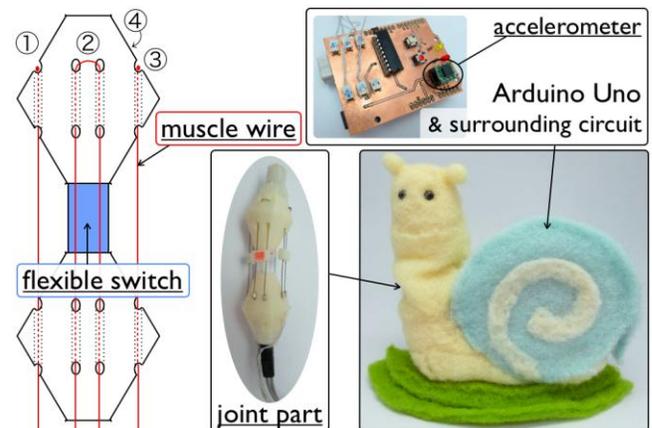
on sharing feelings among couple calmly using a stuffed robot and healing over the feelings.

PINOKY[3] is a mobile, ring-like device that can be externally attached to any plush toy as an accessory. It allows the user to animate plush toys, such as moving its arms, legs, body, or tails. Although this research project proposed unique techniques, the motor noise sometimes prevents calm interaction. We propose the stuffed robot that works smoothly and quietly using muscle wires. The goal to support communication between couple is also different from this project.

CONCLUSION AND FUTURE PLANS

We proposed the Calmate, the communication support system for couples by using a physical avatar and smart phones. In this system, couple members share their negative feelings calmly through the atavar shared among them. In this paper, we described the concept of the Calmate and proposed the SmileSnail, one implementation of the Calmate. We plan to perform a long-term evaluation for further improvement of communication. Moreover, we also explore the possibilities of automatic feeling recognition methods for greater convenience to users.

Acknowledgements

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