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Understanding Social Presence

Daniel Gooch and Leon Watts

Department of Computer Science, University of Bath, Bath, UK
 {D.J.Gooch@bath.ac.uk and L.Watts@bath.ac.uk}

Abstract

Long distance relationships are not well supported by current communication technologies. Although these technologies are superb at communicating facts, they lack an emotional element which we argue is necessary for people who care about one another and yet who must live apart. My PhD aims to address this problem by examining social presence in technologically mediated relationships. Thus far I have built a number of tele-tangible devices to mimic human actions across a distance. I will deploy these systems within a number of long-distance relationships. I expect my research to result in new understanding which will lead to communication technologies with higher levels of social presence, thus supporting long-distance relationships.

Keywords--**Social Presence, Communication Technologies.**

1. Introduction

In an increasingly globalised world, long-distance relationships are becoming more and more common. These relationships need communication technologies to support them but symbolic systems (such as phones or email) are ill-suited to this. People need emotional support from one another; they need communication technologies with high levels of social presence – the feeling of emotional presence.

However, there is currently a lack of any theoretical basis behind the factors impacting social presence especially with regards to interaction design. This means that although there have been a large number of devices created to support relationships, the assessment of their impact is poor and the understanding of what works is minimal.

My hope is that by investigating the factors which impact social presence, communication technologies can be designed to support long-distance relationships. The logic is that by supporting social presence, people will feel closer to one another. Subsequently, this will increase

people's satisfaction with their relationships. As happiness is one of our defining characteristics, and our relationships can make us happy, by maintaining these relationships more effectively, and thus making us happier, we improve our general wellbeing.

2. Background Work

Social Presence as a concept was first discussed in [1] where Short et. al define it as “the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship”. Other terms include emotional connectedness and presence-in-absence. Social Presence has been treated as a property of the medium; this meant that a telephone was expected to convey a certain level of social presence, an email a different level. As such, further investigating social presence was unnecessary beyond assessing the communication medium. This assessment is now regarded as being false; [3] for example has demonstrated that email can create strong feelings of presence. This means that social presence needs to gather some of the research attention which has been lacking in the past, such that the factors which affect it during communicative acts are better understood.

There are a number of communication devices which have been designed to help support social presence. These tend to be either abstract, such as a single light as in [4] or an augmented artefact, for example the bed in [2]. These devices have been innovative at the level of design but crude at the level of evaluation. The assessment of these devices has been poor, mainly due to the lack of a commonly accepted measure. Very few devices, as of yet, have looked at simulating human actions over a distance. This is what my devices attempt to do.

3. Problem Statement

By investigating the factors which impact social presence, I hope to build communication technologies to support emotional communication and thus to help maintain our many long-distance relationships. There are

a number of problems associated with this thesis which need to be addressed. They can be stated as:

1. What is Social Presence? How do we measure it?
2. What factors have an impact on Social Presence?
How can we support these factors in communication technologies?
3. Is there a link between Social Presence and relationship satisfaction?
4. Can we show that the communication technologies with high levels of social presence support long-distance relationships?

4. Projects

This paper is meant to showcase all of the projects we have been working on in the area of social presence. This section describes the projects we have been undertaking in order to start answering the questions we have posed.

4.1. What is Social Presence?

Understanding what social presence means is not a straightforward question. It can be thought of as the feeling of emotional closeness based on a single communicative act. It has a formal definition as provided by [1] of “the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship”. What is lacking is any kind of understanding about what factors have an impact on social presence. We have undertaken a diary study looking at both closeness and social presence. The study has been assessing whether social presence can be treated as an instance of closeness based on a communicative act. The envisaged distinction is similar to that between emotion and mood. [8] presents our initial data, the study has now been completed with around 70 people. The initial findings indicate that Social Presence can be treated as being influential on long-term Closeness based on the net effect of communicative acts. We also found that the data showed a difference in social presence between communication media.

An entire thesis could be completed on how to measure social presence. [9] outlines a substantial number of measurement techniques none of which have been completely accepted by the community. Thus far, we have used established social presence questionnaires, namely the semantic differentials from [1], but this issue remains unresolved. Many of the measurement techniques focus solely on the communication medium used, others are too long to be used in the field over any length of time.



Figure 1 The Magic Sock Drawer

4.2. Social Presence Devices

Thus far we have constructed a number of devices to explore the design space for social presence technologies. All of these devices have been designed to mimic a co-located activity – hugging, holding hands and leaving love notes – but across a distance.

4.2.1. The Magic Sock Drawer. The Magic Sock Drawer (MSD) is a way of leaving love notes between people across a distance in a place of intimacy. The system consists of two units, each unit consists of a tablet PC and a mini credit-card-sized printer. The system has three software options, using handwriting, typing and a combination of the two, to produce the love note. When a person sends a note from one tablet, it is automatically printed out on the other person’s printer. The intention is to investigate whether a trace of the human touch (e.g. using handwriting) has an advantage over machine generated fonts (e.g. typed). Figure 1 shows a complete unit, consisting of a tablet PC to write the note on and a mini printer to print received notes. Figure 2 shows a love note being printed, having been created on the paired unit.

[7] describes the construction of the MSD and a pilot study investigating its impact on a couple’s relationship. Currently, longer term studies are investigating the impact of the MSD. These studies will measure social presence



Figure 3 The YourGlove

but also use a pre- and post- study questionnaire to assess satisfaction with the relationship before and after using the devices. These studies will thus produce data to assess whether there is a link between social presence and relationship satisfaction. By including a diary aspect to these studies, it will be possible to investigate how these improved communication technologies impact people's relationships over time.

Thus far, no formal evaluation of the YourGloves has been undertaken. Comments received from my lab colleagues include "weird" and "creepy". One of the things we wish to investigate is why certain devices which

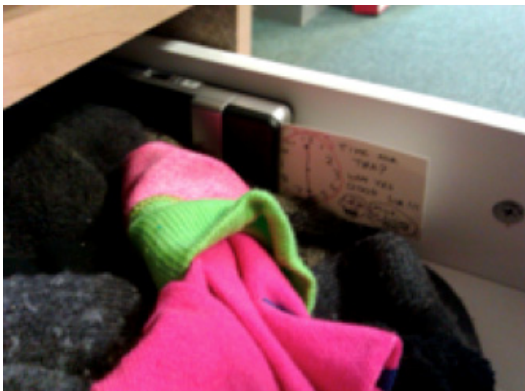


Figure 2 The Magic Sock Drawer The YourGlove Project



Figure 4 The Thermal Hug Belt

mimic co-located behaviour succeed (e.g. [10]) whilst others may not. We plan to run some focus groups with the YourGloves to investigate exactly why they come across as being "creepy".

4.2.2. The YourGlove Project. The second behaviour we have considered is hand- holding. [6] presents a discussion of our hand-holding device, the YourGlove (see Figure 3). A pair of YourGloves are needed to create a communication system. When one hand is gripped, as in Figure 3, the other hand closes. This is intended to represent hand holding over a distance.

4.2.3. The Thermal Hug Belt. The third device takes hugging as it's metaphor for use. Other people have done some work in this area, [10] trying to replicate hugging using pressure. Instead, as described in [5], we attempted to create a hug belt based on heat. The thermal hug belt can be seen in Figure 4. When activated, it creates a band of heat around the waist in a position where one might expect a hug to be felt. We have found experimental data indicating that the device does increase feelings of social presence between close friends.

4.3. The Design Space

Although a number of communication technologies have been developed to help maintain an emotional connection between remote couples, there has been no comprehensive consideration of the design space that these technologies are developed within. We propose the

development of a design framework for intimate communication devices. The intention is to highlight the decisions designers have to make when coming up with new communication systems and provide a more formalised system for considering the issues involved.

Based on an analysis of the literature, including numerous devices, current commercial systems and our developed prototypes, we've developed the following factors as making up our initial framework:

1. Personalisation
2. Sensory Medium
3. Effort
4. Openness of the System
5. Metaphor of Use
6. Fleeting vs Realised Output

There are two main areas of further work. The first is to extend and clarify the framework as what we have presented here is only a provisional framework. A larger issue is investigating which design factors create systems which best support long-distance relationships. This is a substantial challenge given the variety of design decisions and the options within each decision. This is less a task for any individual but more something for the community as a whole to consider.

5. Expected Contributions

We expect that our work will result in information that will help support long-distance relationships. More specifically, we hope it will explain what social presence is and what impact it has on relationships. It will do this through investigating which factors impact social presence and the design factors which will create socially present communication devices. All of this is focussed on intimate couples although many of the findings should apply to other relationship types as well.

A number of novel devices will be developed to explore what is meant by a socially present communication devices. These will give us the opportunity to test several things. The first is to investigate what the impact socially present devices have

on relationships and relationship satisfaction. The second is to help explore the design factors which have to be considered when creating new communication systems.

In summary, our work aims at minimising the disruption physical distance causes between intimate couples. Eventually, when living apart from your partner, you will feel as close to them as possible without actually living with them.

References

- [1] Short, J., Williams, E. and Christie B., 1976. *The Social Psychology of Telecommunications*. London, UK: John Wiley & Sons.
- [2] Goodman, E. and Misilim, M. The sensing beds. In *Proc. UbiComp 2003 Workshop*, pp. 1-3. ACM Press.
- [3] Walther, J.B. 1996. Computer-mediated communication. *Communication Research*, 23 (1). pp 3-43.
- [4] Kaye, J, 2006. I just clicked to say I love you: rich evaluations of minimal communication. In *CHI '06 extended abstracts*, pp. 363-368, USA. ACM Press.
- [5] Gooch, D., and Watts, L., 2010. Communicating Social Presence Through Thermal Hugs. In *Proc. UbiComp 2010 SISSE Workshop*.
- [6] Gooch, D. and Watts, L., 2011. YourGlove: A Device for Remote Hand Holding. In *Press for British HCI 2011*.
- [7] Gooch, D. and Watts, L., 2011. The Magic Sock Drawer. In *Press for alt: CHI 2011*.
- [8] Gooch, D. and Watts, L., 2011. Up Close and Personal: Social Presence in mediated personal relationships. In *Press for British HCI 2011*.
- [9] Van Baren, J. and IJsselsteijn, W. *Measuring Presence: A Guide to Current Measurement Approaches*. Accessed from <http://www.ispr.info/>
- [10] Mueller, F., Vetere, F., Gibbs, M., Kjeldskov, J., Pedell, S. and Howard, S., Hug over a distance. *CHI '05*, ACM Press. 2005. pp. 1673–1676.