

# A2 Domain Research

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## Domain

Communication in Long-distance Relationships

## Define the domain or problem space

### Research question

Why do people lose interests in interactive artifacts quickly compared to traditional computer-mediated communication in long-distance romantic relationships?

While the long-distance romantic relationship is becoming a more and more common choice for the younger generations, the maintenance of the relationship is always considered as one of the major challenges for couples in such relationships. Many conflicts and problems in this kind of relationships emerge simply due to the fact that people have limited opportunities and means for communication which are mainly restricted by the geographic distance, so that a high degree of closeness and relationship satisfaction is rather difficult to achieve compared to relationships in a normal distance setting.

The maintenance of long-distance relationships is continually being a major challenge even with the emergence of computer-mediated communication technology such as video chat, email, social networking websites. This is because these computer-mediated communication tools only provide limited ways of interaction for couples so that any physical interaction is still not feasible to achieve for most people over a long distance. Fortunately, recently there are a lot of inventions of artifacts that are closely related to enabling communication in relationships. These artifacts are innovative enough for engaging couples to use with their partners and effectively helped them create a sense of relatedness over the long distance. However, most of the artifacts failed to demonstrate the ability for long-term usage. That is, the motivation for continued use is quickly lost for the user after trying the system for a few times.

This literature review aims to research and explore the problem of why people lose interests in interactive artifacts quickly compared to traditional computer-mediated communication technology in long-distance relationships. In this literature review, the use of computer-mediated communication for couples in long-distance relationships would be discussed. To be specific, the detailed maintenance strategies for conflicts in relationships will be explored through research as well as the possible communication channels. Furthermore, the merits and deficiency of previous proposed artifacts will be explored and evaluated in comparison with computer-mediated communication.

# Literature Review

## Bridging Gaps:Affective Communication in Long Distance Relationships

S. Bhandari and S. Bardzell, "Bridging gaps", Proceeding of the twenty-sixth annual CHI conference extended abstracts on Human factors in computing systems - CHI '08, 2008. Available: 10.1145/1358628.1358758 [Accessed 23 August 2020].

### Abstract

This study examines communication methods and needs of people in long distance romantic relationships to understand how intimate computing can help create or augment already existing artifacts to promote feeling of connectivity within non-collocated couples. We report our research in progress and provide a collection of initial design concepts based on the user research.

### Critique

#### **Strength**

This paper presents a great overview of the use of the idea - intimate computing that helps maintain long-distance romantic relationships in terms of creating a sense of closeness and togetherness. Through a detailed user study consisting of semi-structured interviews, it is evident that the majority of the participants believed that having good and rich communication is the priority in maintaining a relationship, especially in a persistent manner. The research also highlights that people feel talking to their partners on the phone is different compared to face-to-face conversation since it can only show a certain personality.

#### **Limitations or shortcomings**

A shortcoming of the paper is that although the design concepts are built and established based on the user research and fulfilling the purpose of sharing the experience and enhancing situational awareness, it fails to address the design concepts in the user's perspective. The paper does not investigate the detailed user requirements which are failed to be addressed by the current technology, instead, it makes the assumption regardless. Another limitation of the paper would be the limited sample size during the user research, which only involves eight participants. This could potentially be a major factor in contributing to bias in the findings.

#### **Relevance**

This paper is highly relevant for my design space, because it provides a lot of room for design by specifying the basic requirements in a typical long-distance relationship, which are shared experience and situational awareness. They are both important factors in creating the sense of togetherness. The paper also addresses that the reason why affective communication such as SoftAir failed is that these tools did not alleviate the bad feeling

induced by the absence of their partners but intensify it to a great extent. It also directly connects to the problem space by specifying the exact reasons that people abandon the alternative communication tools, and these tools failed to provide a sense of togetherness.

### **Insights that would help people design for the domain**

What it means for the implication for design within this domain is that design of these interactive artifacts or affective communication should keep the user requirements in mind, that is, creating shared experience and boosting situational awareness.

## Sharing a Robotic Pet as a Maintenance Strategy for Romantic Couples in Long-Distance Relationships.: An Autobiographical Design Exploration

W. Chien, M. Hassenzahl and J. Welge, "Sharing a Robotic Pet as a Maintenance Strategy for Romantic Couples in Long-Distance Relationships.", Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '16, 2016. Available: [10.1145/2851581.2892313](https://doi.org/10.1145/2851581.2892313) [Accessed 23 August 2020].

### Abstract

Furfur is a robotic pet, designed to create feelings of closeness and togetherness for couples in long-distance relationships. Over a period of 200 days, the first author developed different versions of Furfur and applied it to his own long-distance relationship in the sense of an autobiographical design exploration. The paper summarizes key findings and reflects upon the design process itself.

### Critique

#### **Strength**

This paper provides a critique overview of an interactive artifact - a robotic pet that aims for creating a sense of closeness and togetherness for people in long-distance relationships. Rather than conducting detailed user research, the paper dives into a multi-staged design process of the robotic pet, explicitly illustrating the feedback that was received from the experimental subject - the partner of the author. The detailed experimental procedure is important in exploring the needs and deficiencies of people in long-distance relationships. Another advantage of using the autobiographical review is that we can explicitly know how the participants interact with the system and quickly know the merits and drawbacks of it.

#### **Limitations and shortcomings**

One of the limitations of paper is that being an autobiographical design exploration, the nature of that is the small sample size and limited user research methods which only includes two participants in this case. As a result, the results would contain a lot of bias and unexpected situations which in turn achieve the irreproducible results.

### **Relevance**

This paper is highly relevant to my design space because it explores and investigates the essential characteristics needed for an interactive artifact to become a satisfying product for couples in long-distance romantic relationships. During the first and second iterations of the design, the participant lost interest quickly since it failed to create a sense of relatedness and the movement is subtle and not recognisable. This idea relates closely to my problem space, which implies being able to see each other is more effective in alleviating the sense of loneliness. Although, the 'pet' finally gets appreciated by the participant since it started to have behaviours like real pets, the overall frequency of interaction was still not high enough to justify the success of the artifact.

### **Insights for design**

The general purpose of inventing the robotic pet Furfur is to improve the wellbeing of people in long-distance relationships. The design is effective in creating the feeling of relatedness but it fails to demonstrate the ability to provide continuous and frequent communication for both parties in such relationships. Instead, it serves as the purpose of having supplementary communication on top of the day-to-day computer-mediated communication methods. The paper implies that having such supportive artifacts is important for the wellbeing in a relationship since it gives people additional topics to talk about in their lives as well as alleviates the sense of loneliness when the partners are not available. In terms of the design insights, the complex behavioral repertoire may not be the prime for an interactive artifact, instead, simple and meaningful interaction is encouraged for the design.

## Intimacy in long-distance relationships over video chat

C. Neustaedter and S. Greenberg, "Intimacy in long-distance relationships over video chat", Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems - CHI '12, 2012. Available: [10.1145/2207676.2207785](https://doi.org/10.1145/2207676.2207785) [Accessed 23 August 2020].

video affords a unique opportunity for couples to share presence over distance, which in turn provides intimacy and reduced idealization. While beneficial, couples still face challenges in using video, including contextual (e.g., location of partners, time zone differences), technical (e.g., mobility, audio and video quality, networking), and personal (e.g., a lack of true physicality needed by most in order to support intimate sexual acts) challenges

### Abstract

"Many couples live a portion of their lives in a long-distance relationship (LDR). This includes a large number of dating college students as well as couples who are geographically-separated because of situational demands such as work. We conducted interviews with individuals in LDRs to understand how they make use of video chat systems to maintain their relationships. In particular, we have investigated how couples use video to "hang out" together and engage in activities over extended periods of time. Our results show that regardless of the relationship situation, video chat affords a unique opportunity for couples to share presence over distance, which in turn provides intimacy. While beneficial, couples still face challenges in using video chat, including contextual (e.g., location of partners, time zones), technical (e.g., mobility, audio/video quality, networking), and personal (e.g., a lack of physicality needed by most for intimate sexual acts) challenges."

### Critique

#### **Strength**

The main focus of this paper is to discuss the impact of computer-mediated communication technologies such as video chat would have on long-distance romantic relationships as well as discuss the positive effects that video chat has brought to the general user - couples who in long-distance relationships by lowering the level of idealization in a relationship and contributing to the maintenance of relationship over a long distance. The paper presents an extremely detailed overview of how LDR couples can interact with each other over the remote video chat systems in a setting where a single session lasts for a long period of time, these activities include seeing, hanging out, and doing shared activities etc. The results are obtained via a thorough user research that consists of semi-structured interviews which involve fourteen participants. It demonstrates how well video chat systems can outperform other computer-mediated systems in terms of creating a face-to-face shared-living experience.

### **Limitations and shortcomings**

One limitation of this paper would be the lack of statistical metrics and evaluation methods which could be used to better demonstrate the advantages of video chat systems over other computer-mediated communication tools as well as the various user behaviours.

### **Relevance**

It is believed that this paper is highly relevant and useful for my design space, which is to make use of computer-mediated communication technologies in the context of maintaining long-distance relationships. With the help of semi-structured interviews that discuss a variety of uses of video chat systems, it is relatively easy to recognise the problems that are brought by the systems. Although the use of video chat systems provides a means to see each other face to face, the interaction especially physical interaction is quite limited as the sense of presence between partners in long-distance relationships can only be perceived via facial expressions and verbal expressions or even body movements.

### **Insights for design**

The principle of communication between couples in long-distance relationships is being able to see each other in a remote setting as it helps to create a sense of relatedness and togetherness. Due to this reason, computer-mediated communication tools such as the video chat systems can fulfill the needs for couples in long-distance relationships, especially providing the opportunity of day-to-day companions for people. However, since the limitation of video chat systems such as lack of physical interaction, innovation with rich interactive experience is encouraged in addition to video.

# Touch trace mirror: asynchronous, collaborative messaging as a concept for creating a relatedness experience

J. Schmeer and T. Baffi, "Touch trace mirror", Proceedings of the fifth international conference on Tangible, embedded, and embodied interaction - TEI '11, 2011. Available: 10.1145/1935701.1935771 [Accessed 23 August 2020].

## Abstract

"In this paper we introduce the concept of volatile, asynchronous, collaborative messaging as a means of creating a relatedness experience, in this specific context for couples in a long-distance relationship. Based upon the idea of message leaving in a romantic relationship, the "Touch Trace Mirror" is a mirror which enables leaving a message on a steamy bathroom mirror over a distance. It is a set of two bathroom mirrors, one to be placed in each partners apartment. Writing a message on one mirror will result in the message being sent to the partners mirror, where a light will emerge on the mirrors surface. If the partner places a finger on the light, it will move, letting the partner trace the message that his or her loved one wrote. Initial user testing showed that the concept and the aesthetics of the interaction, which developed over two cycles of a user centered design process, seem promising for creating a joyful relatedness experience."

## Critique

### Strength

This paper introduces an innovative and unique interactive artifact - "Touch Trace Mirror" to provide couples in long-distance relationships with the opportunity to communicate with each other in a volatile, asynchronous and collaborative way that is different from traditional computer-mediated communication tools. It is important to note that the initial user research was conducted using a relatively large sample - 100 participants, which is convincing enough to be used for analysis. And one interesting finding is that the participants mentioned that handwritten communication is preferred for people in such relationships but it is usually hard to achieve.

### Limitations and shortcomings

One limitation of the paper is that it fails to illustrate the detailed user research process and user analysis process, which makes the listed findings not persuasive enough for the general audience. For example, it fails to specify the statistics in the user research so that we do not know what percentage of people would consider handwritten messaging as their most preferred way of communication. The paper focuses heavily on the design and implementation part of the concept, however, the proposed interaction methods have not been evaluated in a real-world setting with actual users but only static description of the system.

### Relevance

This paper is considered relevant to my design space since it provides an unique and asynchronous means of communication for people in long-distance relationships. The concept does not involve any computer-mediated communication tools, instead, it utilises the concept of affective technology with the purpose of creating a sense of relatedness in a relationship.

**Insights for design**

In terms of insights for the design space of communication in long-distance relationships, the concept gives an alternative view of the solution by proposing an asynchronous communication system that allows users to collaborate at the same time. It is relatively hard to achieve via traditional computer-mediated communication methods. As a result, it can be a good starting point for integrating affective technology into CMC technology.



# Now Here or Nowhere: Conflict Resolution Strategies for Intimate Relationship in Diverse Geographical Contexts

H. Lim and B. Suh, "Now here or nowhere", Proceedings of the companion publication of the 17th ACM conference on Computer supported cooperative work & social computing - CSCW Companion '14, 2014. Available: 10.1145/2556420.2556501 [Accessed 23 August 2020].

## Abstract

"This research explores the uses of communication channels that couples adopt in varied geographical distance settings. We also characterize their conflict patterns and strategies for resolving the conflicts. We found that the distances between couples have a strong influence on their communication patterns. The distance is associated with typical conflicts pattern that couples confronted as well as the relationship maintenance strategies. In this research, we classify distance settings into four categories. Then, we perform semi-structured interviews with 20 couples in various distance settings. The analysis allows us to develop design guidelines for mitigating conflicts associated with the four distance categories"

## Critique

### Strength

This paper does not simply provide an overview of different conflict patterns and resolving strategies for the conflicts, instead, it uniquely focuses on the correlation between the distance and communication patterns for couples in long-distance relationships. The user analysis is based on the thorough interviews with rich sample size - twenty couples with different distance settings. The paper includes a detailed user research, dividing the participants into four different categories, which are co-located, commutable, non-commutable, and international relationships, which in turn allows the audience to better understand the correlation between distance settings and communication patterns.

### Limitations and shortcomings

One limitation of this paper would be the lack of description for design opportunity in relevant fields. That is, it does not explicitly specify the detailed solutions for conflicts that could happen between non-commutable and international couples, instead, it only uses recommendations that can be easily applied to any other distance settings, such as co-located and commutable. Furthermore, the feasibility of proposed solutions has not been properly demonstrated via user research so that the idea of proposing a coordinating system for long-distance relationships is not persuasive enough.

### Relevance

This paper is considered highly relevant to my design space and problem space because it demonstrates the relationship between distance and the use of mediated channels. As the distance gets larger, the number of communication channels used is also getting boosted since that creating a sense of presence and relatedness requires a lot additional effort in

long-distance relationships. Further, the paper discussed the correlation between distance and conflict patterns which is related to my domain of relationship maintenance. It suggests possible strategies for resolving conflicts in remote distance, such as using a coordinating system.

### **Insights for design**

As can be seen in distance settings of non-commutable and international, the media richness tends to be very high compared to other distance settings. This is generally because the idea of physical interaction is really difficult to achieve in such a remote setting. As a result, people use a variety of mediated communication channels to compensate for the feel of loneliness and to create a sense of relatedness and togetherness. As a great proportion of long-distance relationships take place internationally, devices that can better support synchronous communication in addition to video chat is strongly encouraged. Having an ubiquitous and asynchronous way of communication over different time zones would be the prime for design in such distance settings.

## **Overview statement**

By exploring the previous attempts of design solutions for affective artifacts, it can be easily noticed that many interactive artifacts such as robotic pets attempt to imitate the behavior of a real pet with the purpose of creating a sense of relatedness or creating additional topics for couples to discuss in their daily communication. However, the attempt does not work as desired since it encounters great challenges in the pursuit of high fidelity. This is because people can quickly notice the subtle differences between a robotic pet and a real pet and even enlarge them to a great extent. Furthermore, the majority of artifacts do not support synchronous communication but only asynchronous communication. This is a great disadvantage in comparison with computer-mediated communication that allows couples to communicate in a real-time setting. Synchronous communication is the prime way to create a sense of intimacy in a relationship. As a result, these interactive artifacts can only be served as a means for supplementary communication in addition to traditional CMC tools such as video chat and phone calls.

By exploring the research on communication channels and conflict patterns/strategies for couples in various distance settings, it is evident that there is a strong correlation between the communication patterns/conflicts strategies and the distance between couples in long-distance relationships. As a result, when making design solutions for this problem space, it is important to keep the communication patterns in mind to create a sense of wellbeing in long-distance relationships, such as proposing a system that allows couples to have a sense of control over the long distance.