Computers in Human Behavior 53 (2015) 324–331

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full Length Article

Threading and conversation in co-located chats

Matti Nelimarkka [a,b,*], Vilma Lehtinen [a,d], Antti Ukkonen [a,c], Kai Kuikkaniemi [a], Giulio Jacucci [a,b]

[a] Helsinki Institute for Information Technology HIIT, Aalto University, PO Box 19215, Otaniementie 19-21, FI-00076, Finland
[b] Department of Computer Science and HIIT, University of Helsinki, PO Box 68, Gustaf Hällströmin katu 2b, FI-00014, Finland
[c] Finnish Institute of Occupational Health, Topeliuksenkatu 41 a A, FI-00250 Helsinki, Finland
[d] Faculty of Biological and Environmental Sciences, University of Helsinki, PO Box Viikinkaari 2a, FI-00014, Finland

ARTICLE INFO

Article history:
Received 18 September 2014
Revised 7 July 2015
Accepted 9 July 2015
Available online 17 July 2015

Keywords:
Backchannel
Co-located computing
Co-located chat
Interaction Process Analysis
State robustness
Computer-mediated communication

ABSTRACT

Events create a new kind of setting for the computer-mediated chat, characterized by physically co-located participants. We set out to investigate the features of chat messages in this particular kind of environment, assessing the amount of threading, defined in terms of message content contributing to one topic, and conversation, based on patterns in informational and emotional functions of subsequent messages. We observe that our cases are characterized with a high level of threading, even while the application did not technically support it. Furthermore, we observe patterns that demonstrate these threads were conversations, based on the types of responses in each thread. Based on our findings, we propose that technical tools for public event-based chats can support conversations and suggest that better tools for this should be developed.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Computer-mediated, real-time public chat environments are commonly used in conferences, conventions or together with broadcast content. These activate the audience to contribute: ask questions and share knowledge (Du, Rosson, & Carroll, 2012a; Harry, Green, & Donath, 2009; Larsson, 2013; McPherson et al., 2012). Scholarly research has explored co-located chats in context of meetings (Yankelovich et al., 2005), conferences (Atkinson, 2009; Harry et al., 2009; Reinhardt, Ebner, Beham, & Costa, 2009), and in educational settings (Du et al., 2012a, Du, Rosson, & Carroll, 2012b, 2009; Ebner, Lienhardt, Rohs, & Meyer, 2010). These studies have aimed to facilitate better decision-making (Brodt & Hoption, 2005), and diminish interruptions to the main event (Yankelovich et al., 2005).

The previous research has pinpointed lack of conversation. Participants do not extensively use these systems to respond to, or comment messages from other participants (Du et al., 2012a; Larsson, 2013; McPherson et al., 2012). This limits the possibilities the system has to constructive learning, knowledge sharing, peer-learning and knowledge co-creation (e.g. Du, Rosson, Carroll, & Ganoe, 2009; Siemens, Tittenberger, & Anderson, 2008).

To understand the behaviors in co-located chats in detail, there have been efforts to categorize the content produced by participants, i.e. use labels related to the purpose of the messages (e.g. "related to conference operations", "asked questions" e.g. Du et al., 2012b; McCarthy & Boyd, 2005). We extend these efforts with an examination of the dynamics of participants' behavior in these chats. We focus on the following three questions:

1. Do the messages in co-located chats organize as threads, that is, can the messages be interpreted to contribute to the same topic?
2. Do messages in co-located chats threads organized as conversations, that is, do we observe that there is a pattern in the messages in a thread?
3. If so, can we observe *state robustness* in the threads, where messages are more likely responded in a similar tone with the response?

These questions – and this study – are exploratory in nature. We seek to understand how people utilize co-located chats and aspects of peer interaction in them. We hope these results will help to support both the practices and design of the co-located chat environments further. Furthermore, this study presents one opportunity to reuse existing frameworks in computer-mediated communication and social psychology for co-located chat contexts.

* Corresponding author at: Helsinki Institute for Information Technology HIIT, Aalto University, PO Box 19215, Otaniementie 19-21, FI-00076, Finland.
E-mail addresses: matti.nelimarkka@hiit.fi (M. Nelimarkka), vilma.lehtinen@helsinki.fi (V. Lehtinen), antti.ukkonen@ttl.fi (A. Ukkonen), kai.kuikkaniemi@hiit.fi (K. Kuikkaniemi), giulio.jacucci@hiit.fi (G. Jacucci).

http://dx.doi.org/10.1016/j.chb.2015.07.011
0747-5632/© 2015 Elsevier Ltd. All rights reserved.

We answer these questions by examining co-located chats in their natural settings, referenced as "in-the-wild studies" (e.g. Brown, Reeves, & Sherwood, 2011), as compared to laboratory studies there is increased environmental validity. We study three cases where a commercial co-located chat environment was used. Each of these events was a presentation event with a (co-located) audience following the presentations. The cases lasted between 2 and 4 h and included 40–200 participants. To identify conversations, we use Bales (1951) Interaction Process Analysis (IPA). In earlier research, IPA has been used widely to discern the structure of interaction in different kinds of small group situations, both online and offline (e.g. Chou et al., 2002; Maloney-Krichmar & Preece, 2005; Rice & Love, 1987; Savolainen, 2011).

Below, we first outline previous research related to our research questions: the number of threads (RQ1) and patterns of conversations (RQ2, RQ3). Then we describe the three in-the-wild cases used for analysis and describe the analysis methods in detail. Our findings highlight both the conversational nature of the cases and emergent patterns. Finally, we discuss the results and present implications to research and designers of co-located chat systems.

2. Previous work

2.1. Co-located chats

As argued above, there is an emerging field related to use of computer-mediated communication in physically co-located settings as part of an event (e.g. Bergstrom, Harris, & Karahalios, 2011; Du et al., 2012a; Harry, Gordon, & Schmandt, 2012; Harry et al., 2009; McCarthy & Boyd, 2005). For example, McCarthy and Boyd (2005) and Du et al. (2012b) present grounded categorizations of messages and Du et al. (2012b) extend their analysis by examining which messages gained most interaction and how this interaction took place.

Further elaborating these findings, McCarthy and Boyd (2005) work examines a co-located chat in an academic conference. They observed that messages were related to conference operations, such as inquiries about locations or sharing conference-related information. Secondly, the topics related to work presented during those conferences were discussed, such as people presenting or the content of the presentations. They also observed other activities, such as socializing and humorous or sarcastic comments. Compared to this classification, Du et al. (2012b) work provides more a detailed figure of the content of messages. They classify content to highlight comments made towards the physical settings, questions asked or information shared, discussion, suggestions, social interaction and miscellaneous messages. However, their aim with this classification is to characterize the use, not to examine interaction.

Nonetheless, Du et al. (2012b) also discuss in more detail the topics that generate long conversations. Their results are not that surprising: they suggest that open-ended questions and topics that invite contributions also contribute for longest discussions. Also, posts that examine a controversial topic may be longer than other posts. However, they did not engage with a more detailed analysis of these messages and their interactions, such as examining discussions and types of the messages in detail.

To summarize, these studies provide insights on how chatting is conducted in co-located settings: what is discussed and what type of content is considered interesting. However, much more can be examined in terms of interaction and patterns in these chats. Below, we will present in detail literature on two aspects of interaction, threading, and conversations.

2.2. Threading in event-centric chats

Different event-centric public chats have recently emerged. For example, Twitter may be used during broadcasted content (e.g. Larsson, 2013; McPherson et al., 2012) and the co-located chat environments presented above can be used to support panels, presentations, and classroom situations. One topic scholars have explored is the peer interaction, especially threads these event-centric chats have. A common observation is the lack of threads: participants do not extensively use these systems to give responses or comments to messages from other participants, but rather only to voice their own views and opinions (Du et al., 2012a, 2012b; Larsson, 2013; McPherson et al., 2012).

Both McPherson et al. (2012) and Larsson (2013) studied the use of Twitter during broadcasted television programs. They note that most of the content did not use the inbuilt replies in Twitter (@-mentions), and McPherson et al. (2012) conclude that *"low emphasis on replies raises questions about whether live-tweeting truly constitutes a conversation."* This issue is not solely due to Twitter as a service: Du et al. (2012b) studied chatting in a custom co-located chat system where students were allowed to write comments to a messaging system that was publicly displayed in the lecture hall. They observed that the thread length was 1.95 messages with a standard deviation of 1.90. Furthermore, they highlighted that a clear majority (60.4%) of the messages did not have any responses, which is a similar observation to those made by Larsson (2013) and McPherson et al. (2012). Other studies have indicated the existence of threading but have not quantified it as a comparable number (e.g. McCarthy & Boyd, 2005; Yardi, 2006). Thus, there are mixed findings regarding the level of threading, therefore our first aim is to explore how our cases of co-located chat systems support threading among the audience. Therefore, our first research question is:

1. How many of the messages in co-located chats can be organized as threads, that is, messages can be interpreted to contribute to the same topic?

2.3. Conversations and their dynamics

Bales (1951) Interaction Process Analysis-framework (IPA) has been used to analyze the characteristics of interaction in computer-mediated communication (Maloney-Krichmar & Preece, 2005; Savolainen, 2011). Shortly explained, its main categories focus on task-oriented and socio-emotional reactions, a more detailed description follows in Section 4.1. Recent applications of the IPA observe that computer-mediated communication can be characterized with positive socio-emotional content (Savolainen, 2011). Based on Chou et al. (2002) work on both asynchronous and synchronous communication, the focus on task-oriented communication holds for real-time communication, even while the real-time communication had more socio-emotional messages present.

Furthermore, researchers have noted that readers of comments interpret the previous messages in the thread to influence what is expected of the content of the next messages (Sukumaran, Vezich, McHugh, & Nass, 2011). That is, prior comments are perceived as an indicator of expected subsequent comments. Cheshin, Kim, Bos Nathan, Ning, and Olson (2013) found out that teams working together in an experimental setting, formed patterns regarding the frequency, length, and the content of the messages sent within the team. These highlight conformity towards certain patterns in these conversations. We highlight that these patterns, if existing, present situations where participants consider taking part in the same conversation. Like Sukumaran et al. (2011) and Cheshin et al. (2013), we concentrate on the dynamics that emerge during

Download English Version:

https://daneshyari.com/en/article/350108

Download Persian Version:

https://daneshyari.com/article/350108

Daneshyari.com