Designing Mobile Face-to-Face Group Interactions

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Abstract. This workshop is concerned with understanding the nature of face-to-face group interactions in mobile, but collocated settings. It seeks to examine *group-sensitive design* examples, concepts and techniques, research methods and approaches to study group activities, and to learn how these social activities might be respected and supported by design. We aim to bring together researchers interested in the social organisation of face-to-face interaction, and designers of collaborative groupware and mobile, interactive experiences to explore opportunities and challenges for the design and study of experiences, apps and systems that support, augment or enable collocated activities.

Workshop aims and topics

While considerable work has been conducted in CSCW to support different combinations of collocated and distributed groups across a range of settings and tasks, we are particularly interested in design that *leverages existing social competencies as resources*. Thus, how might the social organisation of groups of friends, families, co-workers, learners, players, and visitors of museums or cities be supported in ways that do not disrupt the dynamic face-to-face group interactions that occur in these settings? For example, how do we design an interactive audio guide that does not isolate the members of a group from one another, and a location-based tour guide that does not redundantly notify every member of the group that a sight is nearby?

The goal of this workshop is to identify the concepts, techniques, approaches and methods to study, respect and support the ways in which groups of people sit-

uate the interactive experience in their ongoing face-to-face interactions in mobile settings. Accordingly, the workshop is both concerned with possible interactive designs, but also investigating situations where design can draw upon everyday social competencies that group members bring to bear on face-to-face circumstances. While there has been significant amounts of collaborative systems developed to smooth over the dichotomies of collocated and distributed teams, we wish to focus specifically on the challenges raised by highly mobile but collocated situations where subtle but concerted organisation between group members is fundamental to experiencing the setting. For instance, we refer to visitor groups to cultural spaces such as museums and galleries, where issues of coordination and collaboration are central to the visiting experience.

Themes and topics around the design and study of group experiences addressed in this workshop include, but are not limited to:

- Discussions or reviews of methods and tools to study and evaluate socio-technical systems with a focus on collocated settings;
- Examples and 'thick descriptions' of interaction and conversation analysis and ethnographic reports of studies of group activities;
- Approaches and examples of how studies of collocated interaction inform group-sensitive design;
- Techniques of sensing social context, e.g., collocation, conversation, and bodily orientation;
- Concepts of group-awareness and group-adaptivity: how might a system be made group-aware and adaptive to the context of the group?
- Ideas of group-sensitive design: how might systems be designed to respect collocated groups and support or enable group activities?
- Reviews and applications of existing design concepts to facilitate group-sensitive design;
- Studies and examples of mobile, interactive experiences, apps or systems for collocated groups;
- Designs and deployments of groupware and CSCW systems, in particular for collocated settings;
- Explorations of interaction techniques aimed at supporting collocated interaction.

Background

The design and study of collocated group experiences has become a challenging, yet major concern of various converging research areas.

Technology support of collocated collaborative work has featured in original and early research in CSCW. For example, Mark Weiser's pioneering research at PARC has investigated how pads, tabs and boards can be networked to support cooperative work (Weiser, 1999); and meeting rooms have been a favourite setting

to devise and study group support systems (e.g., Grudin, 1994). Moreover, what can we learn from key aspects of collaborative groupware that supports distributed groups, such as division of labour, sharing, group awareness and negotiation of roles, tasks, and common goals? The workshop seeks to explore whether some of these cooperative 'features' could also enrich interactive, mobile systems and experiences for collocated groups.

Whilst the technology platform is perhaps a secondary factor, the rapid advancement and spread of mobile technology has added spatial mobility as a particularly challenging factor to the design of group experiences (cf. Bergqvist et al., 1999). This development has contributed to a growing number of group experiences reaching beyond the domain of cooperative work. Interactive and mobile group experiences have been designed and studied in support of cultural visiting in museums (Flintham et al., 2011), cities (Brown et al., 2005), or theme parks (Durrant et al., 2011), and to support learning (Benford et al., 2005) and play (Bell et al., 2006). The workshop seeks to draw on insights from designing and studying such interactive experiences. For example, the trajectories design framework has been synthesized to capture and design the individual routes through interactive experiences that combine multiple roles, interfaces and spaces (Benford et al., 2009). It has been applied to design and analyse visitor groups experiences of an interactive museum installation (Flintham et al., 2011).

In the context of CSCW, studies of collocated activities around artefacts and technology-in-use have played a crucial role in shaping our socio-technical understanding of our area, in informing the design of new technologies, and in improving of existing ones. Methodologically, in particular interaction analysis (Heath et al., 2010) and ethnomethodologically-informed ethnography (Crabtree et al., 2006) have become staple approaches to gain an understanding of the practical accomplishment of action in socio-technical settings that include (but are not limited to) face-to-face interaction.

However, it appears that there is a disconnect between the current approaches to designing mobile group experiences and earlier pioneering considerations that unpack the 'implications for design' of social phenomena such as mobility (e.g., Luff and Heath, 1998) and face-to-face interaction (e.g., Luff and Jirotka, 1998). These considerations appear to be lacking from most interactive group experiences — for example, visitor experiences such as audio guides still isolate the members of a visiting party from one another. Notable exceptions that illustrate the kind of approach this workshop seeks to explore take into account the interactional resources of face-to-face interaction such as gaze, gestures, and bodily co-orientation both in the analysis of socio-technical interaction as well as how they might be exploited in design. Examples include a study of how environments afford or inhibit F-formations for face-to-face interaction (Marshall et al., 2011); considerations how insights from studies of visual conduct may be used to design more sociable robots that guide the gaze of museum visitors more naturally (Kuzuoka et al., 2008), or a study of collocated tabletop interaction that showed that mutual observability of action was an important factor for collaboration (Hornecker et al., 2008).

In summary, the aim of this workshop is to adopt a new perspective to address old challenges by bringing together researchers and designers with expertise and experience in studying and building socio-technical systems for collocated settings, such as CSCW and groupware, interactive mobile experience design, interaction and conversation analysis, and ethnography.

Accepted Papers

Watching the Watchers: Visibility and Mobility in Visitor Experiences

Patrick Brundell, Stefan Rennick-Egglestone and Paul Tennent

Abstract. Mobile devices are increasingly being used to enhance visitor experiences in museums, galleries and in other public spaces. We describe some of the strategies which parents used to manage their childrens experiences with a tablet application in a theme park and some problems that arose as a result. We argue that the same problems of visibility which face group visitors are similar to those experienced by researchers attempting to evaluate such systems in the wild. We offer some design solutions through the use of recording system states and events, and using them as a resource for visitors and researchers.

Experiences from a Real-Time Mobile Collaborative Writing System in an Art Gallery

Matthias Korn, Anna Maria Polli and Clemens Nylandsted Klokmose

Abstract. We present first experiences from Local Area Artworks, a system enabling collaborative art interpretation on-site, deployed during an exhibition in a local art gallery. Through the system, we explore ways to re-connect people to local places by making use of their personal mobile devices as interfaces to the shared physical space. With a collocated collaborative writing system in the semi-public space of a gallery, we encourage local art discussions and provide a platform for the public to actively participate in interpretations of individual artworks. In this paper, we focus on the experiences of small groups of strangers or acquaintances experiencing the exhibition together.

Supporting Collaborative Use of a Mobile Museum Guide for Small Groups of Visitors

Joel Lanir, Alan Wecker and Tsvi Kuflik

Abstract. Visitors often come to museums in small groups of family and friends, yet mobile museum guides are usually designed to support only a single visitor. We examine the use of mobile shared displays such as projectors and tablets to support small groups in the museum context. Our analysis is based on observations of actual museum visitors using both a single, shared display and individual devices to receive information on the museum exhibits. We discuss the possible alternatives and configurations of using different devices, and list the important points that stemmed from our observations.

Bursting the Mobile Bubble

Sus Lundgren and Olof Torgersson

Abstract. Bursting the Mobile Bubble is a design programme aiming at designing collaborative, co-located experiences using mobile devices. In our research we have chosen to explore this field via games and gameplay design, since games open up the design space and allow for design solutions that may seem unusual at first but soon become mainstream. The issues we have found to be interesting arise from combining several connected devices: the division of private vs. public information and interaction; how to design for a co-located awareness, and how to support the design for connected devices.

The Ethical Implications of the Technological Surveillance of Art

Norman Su

Abstract. Every night, traditional Irish musicians gather in sessions at pubs and other public spaces to play tunes together. Each public space has its own tradition and history: i.e., context, players, repertoire, styles, etc. Moreover this tradition is temporally situated; for examples, tunes go in and out of fashion. Yet, tunes themselves are mobile, they travel from session to session via recordings, players, and the Internet. Based on a 2-year long ethnography of Irish traditional musicians, I am developing TuneTracker, a system to record and track the tunes played in a session. In this position paper, I will ask of the ethical implications of surveilling tradition. I argue that focusing on the traditional, artistic genre demands a different set of questions regarding creativity, ethos, ownership, and power relations.

Ambient Awareness of Classroom Activities

Tarmo Toikkanen and Anna Keune

Abstract.   Ambient information displays are backchannels that are designed to work in the periphery of attention. We present a prototype 'Ambire' that combined features from classroom management systems, screen sharing applications, and ambient information displays. Ambire is an open-source web-based tool for streaming the content of students 1:1 devices onto a large screen. All screens rotate slowly in Ambire. The rotation may be stopped, paused, forwarded or tracked back. We posit that a solution such as Ambire will provide qualitative benefits to classroom activities in terms of increased peer learning, sharing, collaboration, and community spirit, and be in stark contrast to ordinary teacher- controlled classroom management systems.

Activities and goals

The main goal of the workshop is to create an interactive and lively platform for researchers and designers to share their experiences, and to develop new perspectives of how collocated group activities can best be studied and supported by design. We scaffold this goal with a mix of presentation and interactive group work in three phases.

Phase 1: Mutual grounding

The initial phase of the workshop is aimed at developing common ground through presentation of position papers and an overview of key related work. The workshop organisers present an overview of relevant methods, techniques, concepts, approaches and key works concerned with collocated group experiences and their support through (mainly mobile) technologies. Participants present their position papers to fellow participants.

Phase 2: Charting the space

This phase is concerned with charting the design and study space for collocated group experiences. Through interactive group work we identify the emergent key themes and issues and then use these in order to categorise, compare and juxtapose the techniques, methods, approaches and concepts from the first phase.

Phase 3: Consolidation and synthesis

The final phase is aimed at synthesizing a repertoire of the key approaches, techniques, methods and concepts to address the key challenges in building and studying group experiences. The repertoire will provide workshop participants with a more

complete and versatile tool set to design and study group experiences in a more encompassing way.

Program Committee

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