Projected Pixels: Exploring Techniques for Feedback in Projection –Enhanced Multi-Surface Environments

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Abstract

Researchers have been exploring various ways that multi-surface environments can be integrated into real world domains. These environments generally have been focusing on device-to-device interactions to share information. However, while working in these environments, we have seen the need for more person-to-person and person-to-device interactions, and the importance of supporting feedback for these types of interactions in multi-surface environments. In my research, I am investigating how projections in multi-surface environments can be used to enhance feedback among person-to-person interactions specifically. In this workshop, I hope to gain new ideas and insights into my research and also gain feedback on my work in progress.

Author Keywords

Multi-Surface Environments; Projections; User Interactions; Feedback; Retail

ACM Classification Keywords

H.3.4. Systems and Software; H.5. Information interfaces and presentation

Interest and Experiences

Multi-surface environments are environments with a variety of different devices, such as tablets and digital tabletops, that are spatially-aware [1]. Researchers have been exploring how to incorporate multi-surface environments into different domains. The majority of the research that I have experience in involves designing and supporting collaborative workspaces using multi-surface environments.

My first experience with multi-surface environments, involved working as an undergraduate research assistant on a collaborative multi-surface environment for emergency response planning. In emergency response planning, different information and protocols needs to be shared quickly and effectively between personnel with different backgrounds and domain expertise [2]. Our research looked into ways in which different information sources can be shared and viewed between public and private devices through spatial interactions in the environment [2].

Following this work, I then began exploring collaborative workspaces for retail environments. Collaborating with a local industry partner, the goals of this research was to utilize customer's personal devices in a retail store that was spatially aware, and explore private and public interactions with devices and people in the environment [3]. We developed a multi- surface environment for the retail space to investigate tasks that are common for retail customers, such as browsing for product information, requesting product information from a device or retail associate, or product purchasing [3].

My experience in applying numerous multi-surface environments to these very different domains has shown significant value in multi-device collaboration and data sharing, both of which are very important in the design of various real world applications. These experiences thus far have fueled my interest in multi-surface environments.

Open Research Issues

The focus of my previous research was device-to-device feedback to support collaboration and the sharing of information. However, as we explored the emergency response and retail domains, we saw that person-to-person and person-to-device interactions were extremely important. Furthermore, it also became extremely apparent that feedback was both necessary and needed to be intuitive.

For example, in emergency response environments, due to the critical demands of an emergency situation, personnel need to be able to communicate quick and efficiently. Additionally, large amounts of information need to be processed by personnel quickly, and typically they need to be notified. As a result, person-to-person and person-to-device feedback is very important in multi-surface environments in this domain. In retail especially, an argument can be made that person-to-person and person-to-device feedback is more important than device-to-device. Retailers need to be able to grab the attention of customers in order to share information (for example, advertisements or product locations), or a customer may need to notify an employee for product help or other questions.

From this, research questions arise on how to provide meaningful feedback in multi-surface environments. Specifically, I have begun looking at how we can provide feedback with projection-enhanced multi-surface environments. Projections can provide a means of feedback in such environments, however, the context of providing feedback in scenarios such as retail

and emergency response is largely unexplored. In my current research, I have been exploring how person-to-person feedback can be improved in multi-display retail environments using projections. I want to explore different methods of providing feedback to customers and employees to increase both customer engagement and awareness in multi- surface environments using projections.

Workshop Goals

My motivation for attending the CSCW 2015 workshop on Supporting "Local Remote" Collaboration is to meet other researchers in this field in order to gain feedback on my current and upcoming implementation, as well as my planned user studies that will be conducted later in 2015. From this workshop, I hope to acquire new ideas on feedback mechanisms for person-to-person and person-to-device environments using projections. I also hope to hear different perspectives on research and implementation methods that I could use to explore this area. I believe that this workshop will also open new opportunities for collaboration, through the exploration of project-enhanced multi- surface environment.

Bio

My name is Sydney Pratte. Currently, I am an undergraduate student at the University of Calgary. I am in my final year of the BSc in Computer Science program with a concentration in Human Computer Interactions and the BA in Italian Studies. In the fall of 2015 I begin the MSc in Computer Science program and I intend this work to be the initial findings for my Thesis. Two years ago, I began work as a research assistant in the Agile Surface Engineering Group[1] at the University of Calgary under Dr. Frank Maurer. During my time with the ASE Group, my interest in research and responsibilities has grown. As I have grown in the lab, under the supervision of Dr. Maurer and other graduate students, I began my own undergraduate research projects exploring projection-enhanced multi-surface retail environments. My interests in research lie in human computer interactions; I enjoy looking at new ways user experience can be enhanced in real world applications.

References

[1]   Burns, C., Seyed, T., Hellmann, T., Costa Sousa, M., Maurer, F. "A Usable API for Multi-Surface Systems". In Proceedings of the Workshop on Envisioning Future Collaborative Interactive Spaces (BLEND'13). Paris, France, 2013.

[2]   Chokshi, A., Seyed, T., Rodrigues, F. M., Maurer, F.: ePlan Multi-Surface: A Multi-Surface Environment for Emergency Response Planning Exercises. In Proceedings of the ACM Interactive Tabletops and Surfaces 2014 (ITS 2014), Dresden, Germany, 2014.

[3]   Pratte, S., Seyed, T., Maure, F.: Exploring Multi-Surface Interactions in Retail Environments. In Proceedings of the ACM Interactive Tabletops and Surfaces 2014 (ITS 2014), Dresden, Germany, 2014.

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[1] http://ase.cpsc.ucalgary.ca/index.php