Social NUI: Social Perspectives In Natural User Interfaces

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Abstract

Natural User Interfaces (NUI) offer rich ways for
interacting with the digital world that make innovative
use of existing human capabilities. They include and
often combine different input modalities such as voice,
gesture, eye gaze, body interactions, touch and
touchless interactions. However much of the focus of
NUI research and development has been on enhancing
the experience of individuals interacting with
technology. Effective NUIs must also acknowledge our
innately social characteristics, and support how we
communicate with each other, play together, learn
together and collaboratively work together. This
workshop concerns the social aspects of NUI. The
workshop seeks to better understand the social uses
and applications of these new NUI technologies – how
we design these technologies for new social practices
and how we understand the use of these technologies
in key social contexts.

Author Keywords

Natural User Interfaces, NUI, Social NUI,
Social Interactions, Collaboration.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g.,
HCI): Miscellaneous.

Natural User Interfaces

The term Natural User Interfaces (NUI) has come to refer to a broad collection of interactive technologies that are argued to draw upon existing human capabilities for communication and human capacity to manipulate the physical world [10]. Typical examples that are commonly referred to under this moniker are input modalities such as voice, gesture, eye gaze, and body-based interaction. At their best, NUIs can provide rich ways for interacting with the digital world that are appropriate to the task at hand.

While the notion of naturalness has been widely deployed in motivating and evaluative narratives around such technologies (e.g. see Karam and schraefel [5] for overview), it is also something that has coming under increasing scrutiny in recent years through. A number of eloquent commentaries and critiques have looked both to examine more specifically what is meant by natural as well as challenge some of the basic claims of intuitiveness, usability, learnability commonly attributed to them (e.g.[7][10][9][2][1]). For example, Widgor and Wixon [10] discuss how Naturalness is not an attempt to mimic everyday interactions but refers to the feeling experienced when using a device such as that felt by a concert violinist playing their favorite violin. That is, it is not merely a property of the device, but emerges through use. For Buxton et al. [1] naturalness depends on the situation and often requires training and practice.

While such commentary and debate are key elements of understanding these technologies, much of the discussion still resides primarily in the locus of the interface between an actor and the material elements of a NUI centric device. In taking this focus, though, it is our contention that opportunities for better understanding of what can be done with these technologies are sometimes being lost. What remains less attended to in much of this analytic orientation to the NUI narrative is a more particular concern with the social (e.g.[9]). That is, how we conceive of and understand these technologies in the social and collaborative context of everyday practices.

Social NUI

The focus of our concerns here then is on what we have come to call Social NUI. In using the term social here our aim is to draw attention to a number of different facets. In the first instance, we are concerned with how such technologies can be thought of more specifically in support of collaborative contexts and how they can facilitate new forms of social interaction, participation and collaboration - how we communicate with each other, play together, learn together and collaboratively work together through these technologies. In part this is about multi person use of these systems. But perhaps more significantly it is about how these systems can be designed for the cooperative production of particular interactions. Morris et al's [5] use of cooperative gestures in which several people collectively enact a gesture is a good example here. Other examples include Huggard et al's [4] Musical Embrace in which people hug a pillow between their collective torsos.

In the second instance, the social refers to a particular analytic orientation that can be taken to the understanding of these so-called NUI technologies. Rather than situating the locus of natural within the experience of an individual actor, we are interested in how these technologies are made sense of and given

meaning in the context of particular forms of practice. For example, O'Hara et al's [8][9] discussion of in air gestures in surgical settings is not about intuitiveness or ease of use through these techniques. Rather, gestural interaction is given meaning in the context of sterile practices enabling medical images to be deployed in new ways and a reorganization of the collaborative practices of surgery. Likewise, in the context of family gaming, Harper and Mentis [3] discuss Kinect not from the perspective of natural interaction but rather how families revel in the fun and absurdity of acting and watching movement based game play. In this respect then, we need to extend the broader set of analytical concerns around these NUI technologies to consider the meaning and values of these technologies as they are enacted in context.

Aim of Workshop

The aim of the workshop then is to bring together key researchers in the field with a view to exploring these different aspects of Social NUI. We seek to better understand the social uses and applications of these new NUI technologies – how we design these technologies for new social practices and how we understand the use of these technologies in key social contexts. The aim will be to bring together a critical mass of perspectives to help develop a consolidated framework for Social NUI.

Workshop themes

The workshop will explore the social aspects of NUI across several domains. These domains include:

- *Home*: NUI interaction techniques for social interactions with family/friends in the home

- *Work*: The use of NUI to support social and collaborative activities in the workplace.

- *Public*: The application of NUI in public social spaces such as public squares, museums, events, and gatherings.

- *Education*: NUI expressed and explored in educational scenarios of all potential types, including formal and informal learning, MOOCs, etc.

- *Health*: New kinds of multimodal interactions in health and wellbeing scenarios of all potential types, but particularly in primary healthcare and social engagement.

We welcome contributions from researchers exploring aspects of Social NUI any of these domains. Contributions can include

- Studies of collaborative use of NUI technologies
- New NUI technologies for social interaction
- Understanding NUI in real world contexts
- Technologies for collective NUI interaction
- Approaches to evaluation and understanding the social aspects of NUI
- Domain specific aspects of social NUI

Benefits and Significance

This workshop aligns with the DIS 2014 conference theme of "Crafting Design". The workshop directly addresses the issues of hand skills found in multi-touch and full body interactions. Furthermore it aims to extend these ideas by exploring how sociality is enabled in these collaborative experiences. Our plans to promote the findings of the workshop to the broader DIS community (through a poster) and to the wider

public (through a journal special issue) will offer lasting benefits.

Biographies of Organizers

Frank Vetere leads the Interaction Design Lab at the University of Melbourne and is Director of the Microsoft Research Centre of Social Natural User Interfaces. His research seeks to understand the use and design of technology for wellbeing and social benefit.

Kenton O'Hara is at Microsoft Research in Cambridge and a Visiting Professor at the University of Bristol. His research explores everyday social practices with technology to informing design and innovation.

Jeni Paay is an Associate Professor in Socio-Interactive Design Research at Aalborg University. She researches in the areas of understanding/designing for social, physical and digital aspects of public urban spaces, and interaction design supporting sociality in the kitchen.

Bernd Ploderer is a Lecturer at the University of Melbourne and Deputy Director of the Microsoft Research Centre for Social NUI. His research explores technologies for health and wellbeing.

Richard Harper is a Principal Researcher at Microsoft Research in Cambridge and co-manages the Socio-Digital Systems group. Richard is a sociologist concerned with how to design for 'being human'.

Abigail Sellen is a Principal Researcher at Microsoft Research Cambridge in the UK and co-manager of Socio-Digital Systems, an interdisciplinary group with a focus on the human perspective in computing.

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