

Nudge & Influence Through Mobile Devices

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ABSTRACT

The aim of this workshop is to provide a focal point for research and technology dedicated to persuasion and influence on mobile platforms. We aspire to establish a scientific network and community dedicated to emerging technologies for persuasion using mobile devices. This workshop would be a unique opportunity for interaction designers and researchers in this area to share their latest research and technologies on ‘nudge’ methods with the scientific communities. Patterns of consumption such as drinking and smoking are shaped by the taken-for-granted practices of everyday life. However, these practices are not fixed and ‘immensely malleable’. Consequently, it is important to understand how the habits of everyday life change and evolve. Our decisions are inevitably influenced by how the choices are presented. Therefore, it is legitimate to deliberately ‘nudge’ people’s behaviour in order to improve their lives. Mobile devices can play a significant role in shaping normal practices in three distinct ways: (1) they facilitate the capture of information at the right time and place; (2) they provide non-invasive and cost effective methods for communicating personalised data that compare individual performance with relevant social group performance; and (3) social network sites running on the device facilitate communication of personalised data that relate to the participant’s self-defined community. Among the issues the workshop will take on are: (a) What opportunities do mobile interventions provide? (b) How far the intervention should go? (c) Is persuasion ethical? and (d) How can we extend the scale of intervention in a society using mobile devices? Participants will contribute to the workshop with examples of nudge and persuasive technologies, and we will work together to create novel ideas, interactive applications on the phone, and discuss future opportunities.

Categories and Subject Descriptors

J.4 [Social and behavioural sciences]: psychology; H.1.2 [User/machine systems]: Human information processing

General Terms

Experimentation, Human Factors, Theory, Design

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Keywords

Nudge, persuasive technologies, human-mobile devices interaction, mobile phones interaction design

1. INTRODUCTION

The aim of this workshop is to provide a focal point for research and technology dedicated to persuasion and influence on mobile platforms. We aspire to establish a scientific network and community dedicated to emerging technologies for persuasion using mobile devices. This workshop would be a unique opportunity for interaction designers and researchers in this area to share their latest research and technologies on ‘nudge’ methods with the scientific communities.

Persuasion and influence draw on many complementary research such as sociology, behavioural science, engineering, computing science, etc.. Patterns of consumption such as drinking, smoking, dieting are shaped by the ‘taken-for-granted’ practices of everyday life. Some social scientists including Shove highlight that the complex sociotechnical, economic, cultural and symbolic systems underlie conceptions of ‘normal’ practices, though what people take to be normal is not fixed but ‘immensely malleable’ [10]. Consequently, it is important to understand how the habits and practices of everyday life change and evolve.

Our choices are inevitably influenced by how the choices are presented (described as ‘choice architecture’). Therefore, it is legitimate to deliberately ‘nudge’ people’s behaviour in order to improve their lives [11]. A ‘nudge’ can be defined as a piece of the choice architecture that influences people’s behaviour towards a determined goal without obscuring any options or introducing significant economic incentives [11, 6]. Thaler and Sunstein highlight research in social psychology that shows one can nudge people simply by telling them what other people do [11]. This has been categorised as descriptive social norm [2]. People evaluate themselves in comparison with other people. For example, written communication of descriptive social norms such as ‘70 % of students on this campus do not smoke’, has been widely used in social-norm marketing campaigns aimed at substance abuse among young people [8].

The use of digital technology is central to make behavioural changes. A novel use of information and communication technology helps transform the lives of individuals, society and business. Digital technology particularly mobile technology can play a significant role in shaping normal practices in three distinct ways: (1) it facilitates the capture of information, enabling accurate, cost effective, timely collection of

data relevant to specifically defined reference groups at the right time and place; (2) it provides non-invasive and cost effective methods for communicating personalised descriptive social norms that compare individual performance with relevant social group performance; and (3) social network sites running on the device facilitate communication of personalised descriptive social norms that relate to the participant’s self-defined community. Recent research on health related interventions shows that mobile phones can be used to actively improve the wellbeing. Whittaker et al. [13] report improvements in many aspects including medication adherence, monitoring and self-management of chronic disorders (such as diabetes) as well as of support treatment in difficult cases. Sending text messages to smokers’ mobile phones proved to be a successful intervention technique in [9]. Mobile phone applications for controlling weight and diet have been successful but the scale of interventions and studies have not been large [12]. These applications are based on reminders and giving hints about the amount of calorie in the food on daily basis and suggesting some healthy food replacements.

Research shows that the use of feedback increases the physical activity too. Pedometers on mobile phones have been used successfully as an unobtrusive, ubiquitous motivational technique in a number of small-scale studies [1, 3, 7, 4]. This research suggests that both individual and social feedback can be effective, and that it is important to use stylised displays to increase interest and avoid privacy concerns. The Ubifit [3] system also used a separate pedometer device but showed that a ‘glanceable’ display on a mobile phone helped to maintain increased physical activity levels. These studies support the need for research of individual and social feedback using a mobile device with a built-in activity monitor.

Global warming is one of the greatest challenges of our time. Personal transportation greatly contributes to this problem by emitting CO2 emissions to the atmosphere. Because transportation is by definition a mobile activity, mobile devices are well suited to sense and provide feedback about these activities [5]. Froehlich et al. [5] explore the use of personal ambient displays on mobile phones to provide feedback on sensed and self-reported transportation behaviours. Their contribution is the first UbiGreen application on the phone and has proven successful in popularising the ‘green’ mode of transportation. This study supports the need for research on individual and social feedback on global warming and the design of the future ‘green’ mobile applications.

1.1 Goal of the Workshop

In spite of the promising results of the above researches which exploit intervention in individuals’ lives and influence them through ‘nudge’, this area is vastly unexplored and remains an active research domain. More specifically, nudge has the following important properties:

- It is amenable to gradual, piecemeal and permanent growth and development of everyday-life habits and practices.
- It impacts at multiple levels – community, group, and individual– and it establishes ties between these levels.
- It does not eliminate the choice: “it’s libertarian in that the individual’s choice reigns supreme; but it’s

parental in that there is a parental push, a nudge, for the individual to make a better choice” [11].

We therefore believe that Persuasion and Nudge Through Mobility can serve as a common ground for research among the diverse community of interaction designers and researchers. This is partly due to fact that the growing interest in Mobile Persuasion as a medium for changing habits and improving health and wellbeing has encouraged establishment of dedicated labs to Persuasive Technologies, namely at Stanford University ¹. Nevertheless, the research in the area of persuasive interaction design remains limited and this workshop aims at addressing these new arising areas of technological as well as sociological research.

In particular the workshop will address the following issues:

- The benefits of mobile interventions versus non-mobile technologies.
- How far should the intervention go?
- Is persuasion ethical? How the ethical issues should be justified to the public? What can be categorised as unethical persuasion and what are ethical concerns regarding mobile persuasion?
- How can we extend the scale of intervention in a society using mobile devices? Do current technologies on mobile phones need to be improved to make big ideas of persuasion possible?

The scope of such an undertaking is huge. We believe that we can explore a number of the issues that need to be addressed in such an undertaking. Therefore, the long-term inspiration of this workshop is to establish itself as an annual event, running along the Mobile HCI conference, where the state-of-the art in nudge and persuasion technologies for mobile devices are presented and researched.

2. FORMAT OF THE WORKSHOP

The workshop is designed as a day-long, highly interactive activity for participants. It is structured around a plan for (novel) ideas around ‘nudge’ and influence through mobile devices, problem analysis of using ‘nudge’, solution sharing, and documenting best practices and areas for further work.

2.1 Participant Solicitation and Selection

We will solicit the Mobile HCI community through all the usual mechanisms including e-mail and personal contacts, especially at several upcoming meetings. In addition, we would like to include one or more scientists who are involved in the CHARM project (see Section 4) in the committee. We plan to distribute the call via three electronic list services: CHI2010, Mobile HCI’10, and BritishHCI’10.

As outlined in the call for participation (attached), potential participants will be asked to provide three contributions:

- Their view of the ‘nudge’ in daily life as described in the theme of the workshop,
- A brief description of their current research in the area of mobile persuasion,
- A brief statement of their research outcome.

¹www.mobilepersuasion.org

2.2 Desired Number of Participants

The workshop seeks to bring together researchers, developers, practitioners and students from academia and industry who are concerned with envisioning, creating and implementing persuasive and influential mobile user interfaces. We aim to attract minimum 25 participants to enable inspiring and exciting discussions in streams.

2.3 Preliminary Schedule

A detailed time line of the workshop organisation is given in Table 1.

2.4 Method of Interaction

- Initial presentation. Up to six participants will be selected to present their work on mobile persuasion. Selection will be based on relatedness of the problem situation tackled by ‘nudge’ and future-oriented solutions. Presenters will be asked to prepare a 15 minute talk and allow 5 minutes for questions. The discussions will be guided to focus on the problem statement and common threads between examples. These threads will be captured during the discussion and subsequently shared with the group.
- Understanding ‘nudge’ in different contexts/ ‘problem statement development’. The problems from different examples, which ‘nudge’ seems to be a ‘natural solution’, will be examined for common threads so a focused problem statement can be developed.
- “Level” of issues around ‘nudge’ and influence. A modified K-J method (bottom-up group clustering) will be used to cluster participants and form smaller groups. Participants will brainstorm, post and group around the “level” issues around ‘nudge’ and persuasive mobile technologies.
- Prioritisation. Issues will be ranked so that those of highest priority can be dealt with.
- Solution discussion. After careful dissection of the issues, we will propose and discuss solutions. This will emphasise proven techniques, but also include future solutions.
- Best Practices / Unresolved Issues. This activity will result in a description of best practices for nudging and influencing individuals and societies through mobile devices and a list of unresolved issues for future research.

2.5 Pre-workshop Activities

Prospective participants will be requested to submit real-world examples of applying ‘nudge’ through mobile devices to meet the needs of users and beneficiaries in the areas of environment, health and wellbeing, social behavioural disorder, and education. The workshop organiser will select six of these examples for oral presentation during the workshop event. Communication between participants will be facilitated prior to the workshop, via e-mail, to begin discussion of the topic.

2.6 Plan for Dissemination

Papers will be peer-reviewed and the workshop proceedings will be published online through *CEUR Workshop Proceedings*. The best paper from the workshop will also be nominated for inclusion in a Special Issue of the International Journal on Mobile HCI (IJMHCI).

3. ORGANISER(S) BACKGROUND

Dr. Parisa Eslambolchilar is a lecturer in the FIT Lab at Swansea University since March 2007. Her research interests are in the area of dynamic, continuous interaction with small computing appliances, multimodal interaction, human-computer interaction (HCI) in medical devices and healthcare, and persuasive technologies. She is a regular reviewer for ACM CHI and Mobile HCI conferences and International Journal of Mobile Human-Computer Interaction (IJMHCI). She has given many talks/presentations on continuous interaction and novel interaction techniques with small computing devices, including talks at the SONY Computer Science Research Institute (Paris), SHARP research lab (Oxford), and Knowledge Media Institute (Milton Keynes). She was entered into the RAE 2008 with four full papers, all peer reviewed. She is a co-investigator in, “Healthy interactive systems”: Resilient, Usable and Appropriate Systems in Healthcare, EPSRC-funded platform grant (ref EP/G003971), which brings her expertise into medical devices and healthcare. Also, she is a Co-Investigator in an EPSRC funded project EP/H006966/1 “CHARM: Digital technology and interfaces: shaping consumer behaviour by informing conceptions of ‘normal’ practice”. CHARM proposal brings Dr. Eslambolchilar’s expertise into social behaviour research, and active lifestyle.

Dr. Max Wilson is interested in cognitive and social elements of human information interaction, particularly during exploratory scenarios. In his prior work, Max created a theory-based evaluation method for designing information seeking interfaces, which has been applied to a range of on-line, mobile, and collaborative scenarios. Part of his work has been in location-based exploration with mobile information systems, through projects like mSpace Mobile. Recently, his work has focused on the cognitive issues of information interaction, aiming to create lightweight interface designs that allow users to focus on the task at hand. His research has been published in top level ACM conferences (inc. CHI and UIST), international journals (inc. JASIST and IP&M), and has recently completed a research monograph with co-authors, including Ben Sheiderman. Dr. Wilson received an MEng in Software Engineering and a PhD in HCI and Information Seeking from Southampton University, and now lectures at Swansea University in the FITLab research group.

Dr. Andreas Komminos received his B.Sc (Honours) in Computer Science from Glasgow Caledonian University in 2001 and a Ph.D. in Mobile Computing from the University of Strathclyde, UK in 2005. His main research interests include Pervasive Computing, HCI and Mobile Information Access. He has worked as a researcher and part-time lecturer at the University of Strathclyde since 2001 and is currently a lecturer in Mobile and Ubiquitous Computing at Glasgow Caledonian University, where he co-directs the Mobile and Ubiquitous Research Group. He has authored several publications in the area of Mobile and Pervasive computing and is

Table 1: A detailed time line of the workshop organisation

Time	Activity	Notes
9:00 – 9:20	Ice-breaker / Warm-up	
9:30 – 11:00	Presentations	One keynote plus 4 pre-selected participants present @15 min.
11:00 – 11:20	– Break –	
11:30 – 12:30	Presentations	Cntd.
12:30 – 1:30	– Lunch –	
1:30 – 2:30	Clustering participants around the “level” of issues around ‘nudge’ and influence	Using the K-J method (bottom-up group clustering), participants will break into smaller groups.
2:30 – 2:50	– Break –	
2:50 – 3:05	Prioritisation of issues	
3:05 – 5:00	Solution discussion Current practices & proposed solutions	Emphasis on proven examples

a programme committee member for several conference series, including Mobile HCI, as well as a reviewer for several Journals.

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