PINC: Persuasion, Influence, Nudge and Coercion through mobile devices

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Abstract

This workshop will provide a focal point for research and technology dedicated to supporting behaviour change through Persuasion, Influence, Nudge and Coercion (PINC). A particular focus is on pervasive and mobile technologies and the unique opportunities they present in this domain (e.g. in terms of data-capture and timely intervention). Although much isolated research takes place tackling particular aspects of this problem space (e.g. persuasion), this workshop will be the first venue to provide a forum that discusses meta-issues that apply to behaviour change and pervasive technology, irrespective of how it is achieved. These issues include: (a) What novel opportunities do pervasive technologies provide? (b) When is the appropriate time to begin, reduce or end intervention? (c) Are PINC methods ethical? and (d) How can we extend the scale of intervention?Participants are invited to contribute to the workshop with examples of PINC technologies, and the event will focus on mapping the conceptual space, creating novel ideas and interactive applications and discussing future opportunities. Ultimately, the workshop aspires to establish a community dedicated to this topic.

Keywords

Nudge, persuasive technologies, influence, coercion, human-computer interaction, human-mobile devices interaction, mobile phones interaction design

ACM Classification Keywords

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

Introduction

This workshop will provide a focal point for research and technology dedicated to Persuasion, Influence, Nudge and Coercion (PINC) in pervasive computing; it aims to inaugurate a scientific network and community dedicated to this topic. It argues no equivalent community current exists, and that the creation of one is both important and timely. We identify four reasons for both this lack and its associated need. Firstly, the concepts and applications of PINC are inherently interdisciplinary, drawing on domains such as sociology, behavioural science, engineering, computing science and HCI. A dedicated event will serve to bring together these disciplines. Secondly, PINC affects a range of topics that are increasing in societal importance, including behaviour change in eating habits, smoking and drinking behaviours, exercise regimes and the consumption of resources (e.g. electrical, transportation). Clearly, PINC techniques matter; this proposal argues they warrant a dedicated forum. Thirdly, we identify the relevance of pervasive and mobile technologies to PINC - the novel opportunities they afford in sensing, display and timely intervention offers a substantial vista of compelling new forms of intervention. This workshop will tap into these emerging possibilities. Finally, although individual communities tackle aspects of the PINC research space (e.g. persuasion), we argue that the lack of a unified forum can lead to replication in research and a lack of consensus. Some issues, such as ethical ones, also span the entire concept of intervention to achieve behaviour change and deserve a general forum for discussion. These issues will form the fundamental topics for discussion in the workshop.

This workshop proposal is structured as follows. It first introduces the four areas of PINC, then expands on each of the reasons identified above: the diversity of the community and the breadth of the application areas, the relevance of pervasive technology and the meta-issues that cover the whole community.

Definitions

This workshop is concerned with approaches to intervene and affect the process of behaviour change. It considers four approaches, briefly defined below:

Persuasion: Often referred to by the term "captology", the study of persuasive technology is well established [3]. It is characterised by three broad considerations: the use of digital tools that empower individuals to better complete tasks or inform themselves about situations; the role of simulation environments (media) that allow users to explore and experience the outcomes of behaviours and; the use of computers as social actors that produce behaviour change via processes such as encouragement or by leveraging social rules.

Nudge: A 'nudge' is defined as a piece of the choice architecture (how choices are presented) that directs people's behaviour towards a determined goal without obscuring any options or introducing significant economic incentives [5, 8]. Thaler and Sunstein highlight research in social psychology that shows one can nudge people simply by telling them what other people do [8]; many other possibilities exist.

Influence: Popularising the area of psychology known as social influence, Cialdini [1] explored how people can affect the behaviour of others, with a specific focus on inducing them to comply with requests. Six principles for influence were defined and explored: reciprocation, consistency, social proof, liking, authority and scarcity. A particular focus of this work was on the use of influence techniques in business and professional relationships.

Coercion: Referring to the use of explicit threats or intimidation to achieve outcomes or change behaviours, this topic has received scant attention in the field of HCI. Regardless, it remains an important and widely deployed tool (e.g. by gov-

ernments, parents) and deserves discussion. A prominent example of coercion in the digital domain is use of threats of prosecution (by both companies and governments) to deter illegal sharing of media files.

Community and Application Domains

Research of the area of PINC inherently engages with a wide range of research fields. Much of the underlying theory originates with social scientists, such as Shove [7], who has written on the complex socio-technical, economic, cultural and symbolic systems that underlie 'normal' behaviour. Others, such as Cialdini [1] have updated the concept of social norms with actionable new refinements such as the distinction between descriptive and injunctive norms (the former make statements about common behaviour while the latter express an overt message about behaviour). Applied researchers such as Nolan et al. [6] have then effectively applied these theoretical distinctions in the domain of environmental sustainability. Other influential figures in this field include computer scientists, such as Fogg [3] and it is clear that the field is inherently and irrevocably interdisciplinary. This is also clearly evidenced by the range of application domains to which PINC approaches are relevant. A non-exhaustive list of example projects and domains is provided below:

Diet: Mobile phone applications for controlling weight and diet have been successful but the scale of interventions and studies have not been large [9]. Generally, 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.

Exercise: Research shows that the use of interactive feedback can increase physical activity. Pedometers on mobile phones have been successfully deployed as an unobtrusive, ubiquitous motivational technique in a number of small-scale studies [2, 3]. 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. In another example, the Ubifit [2] system also used a separate pedometer device but showed that a 'glanceable' display on a mobile phone helped to maintain increased physical activity levels.

Sustainability: Global warming is one of the greatest challenges of our time. Personal transportation greatly contributes to this problem by emitting CO_2 emissions to the atmosphere. Mobile devices are well suited to sense and provide feedback about these activities and Froehlich et al. [4] explore the use of personal ambient displays on mobile phones to provide feedback on sensed and self-reported transportation behaviours. There early results suggest their interventions can effectively popularising the 'green' mode of transportation.

Pervasive PINC

The use of pervasive and mobile digital technology provides a key opportunity to support behavioural changes. It offers a number of advantages over traditional fixed computer technology and 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, cost effective and timely 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. This workshop proposal argues that pervasive and mobile technologies will be the key enabled or effective, compelling PINC systems.

Meta-Issues in PINC

This proposal identifies the following issues as relevant to the PINC concept. It welcomes submissions and will be structured in order to address them.

- The benefits of pervasive and mobile interventions over traditional systems - what makes this new technological paradigm compelling?

- When is the appropriate time to begin, reduce or end intervention?

- Are PINC methods 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 pervasive and mobile technologies? Do current systems, such as mobile phones, need to be improved or revised to realise the full possibilities of PINC interventions to achieve behaviour change?

Conclusions

This workshop proposal has identifies the research area of pervasive technologies to support behaviour change via a range of PINC methods. It attempts to provide a definition for this domain and argues for the need of a community dedicated to this topic. It highlights the breadth of the contributing community, the range of application areas, the relevance of pervasive technology and isolates key meta-questions than span this domain. Ultimately, it aims to lays down the foundations for a research community on and around this topic.

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