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Persuasive Technology: Introduction to the Special Section

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Persuasive Technology: Introduction to the Special Section

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Abstract:

Whether we want it or not, information systems and technologies always have an effect on our behavior. Moreover, there are situations in which the goal of an information system is to influence end-users' behaviors. This special section of *Communications of the AIS* is devoted to *persuasive technology*, i.e., interactive computing systems designed to change people's attitudes or behaviors. The guest editorial introduces the topic to CAIS readers and provides both conceptual tools for obtaining a deeper understanding about persuasive technology and practical applications to demonstrate its potential for research and development in the future.

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I. INTRODUCTION

Until recently, most software applications and technologies were developed without much thought to how they influenced their users. This perspective is changing. Today, industry experts and academics are embracing a purposeful approach to persuasive design. In an industry context, designing for persuasion is becoming essential for success. In academic settings, the study of persuasive technology illuminates the principles that influence and motivate people in different aspects of their lives.

Persuasive technology may be defined as any interactive computing system designed to change people's attitudes or behaviors [Fogg 2003]. The emergence of the Internet has led to a proliferation of Web sites designed to persuade or motivate people to change their attitudes and behaviors. The auction site eBay has developed an online exchange system with enough credibility that users are persuaded to make financial transactions and to divulge personal information. Within the domain of e-health, systems such as mobile applications for managing obesity and digital interventions to overcome addictive behaviors have demonstrated the huge potential of persuasive technologies for behavioral changes.

In his seminal work, Fogg [2003] brings up tools for thinking about the roles from the perspective of the user that computing products play. According to this, interactive computing technologies can play three roles: as tools, as media, and as social actors. A tool can be persuasive by making target behavior easier, leading people through a process, or performing calculations/measurements that motivate. As a medium, it can be persuasive by allowing people to explore cause-and-effect relationships, providing people with experiences that motivate, or helping people to rehearse a behavior. A social actor can be persuasive by rewarding people with positive feedback, modeling a target behavior or attitude, and providing a social network of support. Within the healthcare field, we anticipate that interactive technologies will be deployed to take on more than one role at a time. For example, one can have a simple tool to measure calories, while it can also give a reward upon the attainment of a personal goal. If several people are connected to a server through the Internet, then social support can be leveraged, which has been shown to impact motivation and behavior change.

Persuasive technology is rapidly growing into a major discipline, and the persuasive conference series is dedicated to this research area. *Persuasive 2008*, hosted in Oulu, Finland, in early June 2008, was jointly organized by the University of Oulu, Finland, and Aalborg University, Denmark. Research themes of the conference included mobile persuasion, Web2.0, motivational technology, persuasive games, smart environments, well-being, and health behavior [Oinas-Kukkonen et al. 2008]. In addition, attendees and participants explored the theory, methodology, and ethics of persuasive technology, social and organizational issues, business models for persuasive systems, and conceptual and theoretical approaches. After the conference was over, it was decided to fast-track the publication of some of the best papers from the conference in a peer-reviewed journal. The editor-in-chief of the *Communications of the AIS* was contacted, and he kindly agreed with this special issue. Authors of 10 of the top papers were contacted to submit their work but only six of them could make our timeline. The authors of these papers were invited to extend their papers. These extended versions were then sent for blind review. After at least two rounds of reviews, five papers were accepted for publication at the special issue of persuasive technology at the *Communications of the AIS*.

II. GUIDE TO THE SPECIAL SECTION ON PERSUASIVE TECHNOLOGY

The special section consists of five articles. One of the articles offers methods and tools for persuasive systems design, whereas two articles discuss specific areas related to persuasive technology, namely health interventions and social networks, and two articles describe practical applications of persuasive systems.

The first article, "Persuasive Systems Design: Key Issues, Process Model, and System Features," by Harri Oinas-Kukkonen and Marja Harjumaa defines what a persuasive system is and describes a framework for designing and evaluating such systems. Their Persuasive Systems Design (PSD) model proposes seven underlying postulates behind any persuasive systems and describes ways to analyze the goals and strategies for these systems. Moreover, it describes 28 distinct design principles for persuasive content and functionality with software requirement and implementation examples. Finally, the framework organizes the persuasive techniques into four categories, namely primary task, dialogue, system credibility, and social support categories. Overall, this article links

the persuasive technology research with the information systems research, and it provides a foundation for further work for both designers and researchers of persuasive systems.

The second article, "ePsychology: Designing Theory-Based Health Promotion Interventions," by Pål Kraft, Filip Drozd, and Elin Olsen applies persuasive technology to the area of e-health, in particular software-based inventions to promote healthy behaviors. The authors suggest design principles for digital therapies to drive behavior change, describing a plethora of related research and clustering it under suggested principles. The article is structured into four sections with multiple propositions: research methods and practices, behavior change, engagement, and use of digital interventions. It provides a valuable starting point for investigators working in this interdisciplinary area which could be served by better awareness and use of results from psychology.

The third article, "Networks and Persuasive Messages," by Donald Steiny explores the concept of persuasive messages. Human beings receive multiple messages from multiple channels. They also respond to messages based on roles that they acquire over time. Such roles exist inside social networks. This paper analyses the roles as well as ways of measuring such roles in social environments and shows how such an analysis can be useful.

The fourth article, "The Dimensions of Website Credibility and its Relation to Active Trust and Behavioural Intent," by Brian Cugelman, Mike Thelwall, and Phillip Dawes discusses two trends that threaten to undermine the effectiveness of online behavioral interventions: Growing mistrust and competition. This study explores the relationships between Web site credibility, trust and behavioral intentions. Using structural equation modeling they show that trust plays a partial mediating role between website credibility and behavioral intentions.

The fifth article, "Persuasive Technology to Shape Social Beliefs: A Case of Persuasive Health Information Systems for Rural Women in India," by Vikram Parmar, David Keyson, and Cees de Bont demonstrates how persuasive technology can be coupled with the Theory of Planned Behavior. The article applies persuasive technology to health behavior change through the design and development of a primary health information systems for rural women in India. The authors explain the design process and theoretical motivations and present results from two studies that were part of this process.

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ABOUT THE AUTHORS

Harri Oinas-Kukkonen, Ph.D., is a professor of information systems at the University of Oulu, Finland. His current research interests include the next generation of the Web, human behavior change, and social and organizational knowledge management. His research has been published in journals such as *ACM Computing Surveys*, *Communications of the ACM*, *The DATA BASE for Advances in Information Systems*, *European Journal of Information Systems*, *Information and Software Technology*, *Information Technology and Management*, *International Journal of Healthcare Information Systems and Informatics*, *International Journal of Human-Computer Studies*, *International Journal of Networking and Virtual Organizations*, *Journal of Digital Information*, *Journal of Healthcare Information Management*, *Netnomics*, and *Software Process Improvement and Practice*. In 2005, he was awarded The Outstanding Young Person of Finland award by the Junior Chamber of Commerce for his achievements in helping the industrial companies to improve their Web usability. Harri was the General Chair and Program Chair for the Persuasive 2008 conference held in Oulu in June 2008.

Samir Chatterjee, Ph.D, is a professor of computer networking and telecommunication in the School of Information Systems & Technology and Founding Director of the Network Convergence Laboratory at Claremont Graduate University, California. He is widely recognized as an expert in the areas of next-generation networking, voice and video over IP, and e-health technologies. One of his current projects is exploring the area of primary and secondary

prevention in healthcare by designing effective persuasive technologies (such as cell phones and sensors) that has the potential to alter health behaviors. He has published more than 80 articles in refereed conferences and scholarly journal including *IEEE Network*, *IEEE J. on Selected Areas in Communications*, *CACM*, *Computer Networks*, *International Journal of Healthcare Technology & Management*, *Telemedicine & e-Health Journal*, *Information Systems Frontiers*, *JMIS*, *Information Systems*, *Computer Communication*, *IEEE IT Professional*, *ACM CCR*, *Communications of AIS*, and *JAMIA*. Samir is the Program Chair for the Persuasive 2009 conference to be held in Claremont in April 2009.

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