

Personalizing Persuasive Technologies: A Road Map to the Future

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Abstract. Personalizing persuasive technologies can increase their efficiency and potentially leads to sustained behavioral change. Building on the success of the 2017 workshop which witnessed 12 peer-reviewed paper presentations, one keynote presentation, and over 40 participants from over 15 different countries, this year's workshop aims to advance the research area even further by addressing outstanding challenges and opportunities identified during 2016 and 2017 workshops and developing new focus areas for the field. The workshop aims to connect a diverse group of researchers and practitioners interested in personalization and tailoring of persuasive technologies. Attendees are encouraged to share their experiences, ideas, discuss key challenges facing the area, and discuss how to move the field forward. The workshop will cover broad areas of personalization and tailoring, including but not limited to personalization models, computational personalization, design and evaluation methods, and personalized persuasive technologies. We welcome submissions and ideas from any domain of persuasive technology and HCI including, but not limited to health, sustainability, games, safety and security, marketing, eCommerce, entertainment, and education. Workshop papers and ideas will be archived online to be accessible to the general public.

Keywords: Personalization, tailoring, persuasive technology, captology, persuasion

1 Introduction

Research in the area of Persuasive Technology (PT) and Behavior Change Support Systems (BCSS) faces a number of scientific challenges that present great opportunities for advancing research in this field. One of the most significant of these challenges is the issue of *personalizing* persuasive technologies. Personalizing persuasive technologies is the act of tailoring persuasive technologies to the target audience to increase their relevance, motivational appeal, and hence their overall effectiveness.

Although recent research has shown that personalizing persuasive systems can indeed increase their efficacy at motivating the desired behavior change [1–4] and that a persuasive approach that works well with one group of people may demotivate a different group [2, 5], there is little knowledge on *how* persuasive technologies can best be tailored. Currently effective general insights and methods for personalization are lacking, we do not have the (technological) tools at our disposal that allow us to use the wide range of data that originates from many persuasive technology applications to tailor the user interaction, and we lack long-term evaluations of personalization efforts. Hence, while personalization of PT and BCSS is clearly promising, the field is still in its infancy and highly benefits from active, interdisciplinary and open workshops and discussion; precisely the workshop we have

organized in previous years and aim to support once again during this year's Persuasive Technology conference.

Personalizing user interfaces and systems in general has received quite some attention from the Human-Computer Interaction (HCI) researcher community in general [6]. However, most of these findings may not be readily applicable in personalizing persuasive systems as the effectiveness of the systems is not only determined by their ability to elicit a positive user experience but ultimately by their ability to cause the desirable behaviour change. Moreover, the effectiveness of various persuasive approaches will vary depending on the target user type, the context of use, and the target behaviour [7, 8].

This realization has led to a growing interest in finding ways of personalizing and tailoring persuasive systems. However, so far, only few attempts have been made toward personalizing various persuasive technologies or developing approaches for personalizing persuasive technology. For example, research has suggested that individual characteristics such as personality type [9–11], age [8], gender [12, 13], gamer type [5, 14, 15], and culture [16, 17] as well as individual's susceptibility to persuasive attempts [2, 18] can be useful dimensions for tailoring. Research has also explored how various psychological processes can be used to explain the persuasive effect of tailoring [3, 19, 20]. Finally, in recent years researchers are exploring how they can use the large amounts of data generated by persuasive applications to tailor these applications using artificial intelligence (AI) and machine learning approaches (ML). [2] However, there are still many unexplored issues pertaining to designing, implementing, and evaluating personalized persuasive systems and the efficacy of personalized persuasive systems in different domains.

The first edition of this workshop that was held in conjunction with the Persuasive Technology Conference in 2016, and the second edition was held during the 2017 conference. Both workshops witnessed a large number of peer reviewed papers on a variety of topics including methods, theories, systems, and domains [21, 22]. The two workshops jointly attracted over 80 participants from over 15 different countries and offered a platform for networking and exchanging of ideas for scholars and practitioners from both academia and industry. This year's full-day workshop aims to build on the success of the previous editions and advance the research area further by addressing outstanding challenges and opportunities identified during the previous workshops [21, 22] (e.g., the difference between Adaptivity and Adoptivity, system-controlled and user-controlled personalization, the use of AI and ML for automatic personalization, etc.) while identifying new ones.

2 Goals and Core Questions

The full-day workshop will bring together the academic and industrial community interested in personalizing persuasive technologies to brainstorm and jointly explore these topics and define a roadmap for future research in this area.

In this context, we want to explore the following topics and questions:

- Frameworks and models for developing personalized persuasive technology.
- Objective and subjective approaches to personalizing persuasive technologies.

- Methods and Metrics for evaluating the effectiveness of personalized persuasive technology.
- Long-term evaluation and evidence of long-term effect of personalized persuasive technology.
- Methods for large-scale computational personalization.
- Systematically investigating and highlighting the difference between Adaptivity and Adoptivity.
- Systematically investigating and highlighting the difference between system-controlled personalization and user-controlled personalization.
- The relationships between individual characteristics and effectiveness of various persuasive technology features.
- How to balance the cost and benefit of personalizing persuasive technology.
- How to develop ethical and privacy-sensitive personalized persuasive technology.
- What do we personalize (for example, do we personalize the persuasive strategies, approaches, or end-goals)?
- How do we personalize (e.g., subjective and objective personalization methods)?
- Who do we personalize for (e.g., personality, gender, age, persuadability, player types, emotional states, contextual/situational variables)?
- Challenges and limitations of implementing personalized persuasive technology and possible solutions.
- Case studies and examples of personalized persuasive technologies.
- Success and failure stories with regard to personalized persuasive technology.

3 Workshop format

This will be an interactive workshop structured to encourage discussion and active collaboration among attendees. The workshop will feature a keynote talk, presentation sessions for the peer-reviewed papers, breakout sessions, and a final discussion session to wrap up the event. The format is deliberately informal and interactive; we aim to build relationships between researchers and further develop and discuss the field as a whole.

4 Workshop Outcomes

Through critical reflection, presentations, and brainstorming, the workshop will outline a roadmap for personalization in persuasive technology research. It will contribute an overview of the state of the art in persuasive technology research addressing the issue of personalization, and outline challenges and opportunities. It is planned to establish a working group that will continue to discuss and collaborate on issues personalization in persuasive technology. Finally, based on the submissions to our three subsequent workshops, we will invite authors of position papers to contribute to a special issue on personalized persuasion in a leading journal in the field.

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