

2015 International Workshop on Personalisation and Adaptation in Technology for Health

Preface

Matt Dennis¹, Kirsten A Smith¹, Floriana Grasso², and Cecile Paris³

¹ University of Aberdeen, UK
`{m.dennis,r01kas12}@abdn.ac.uk`

² University of Liverpool, UK
`floriana@liverpool.ac.uk`

³ CSIRO, Marsfield NSW, Australia
`cecile.paris@csiro.au`

Abstract. This full day workshop on Personalisation and Adaptation in Technology for Health (PATH) showcases innovative user modelling and personalisation research that focuses on promoting access, improving efficiency and enhancing quality within healthcare. There is a clear need for user modelling and personalisation for patients as they are diverse and have widely varying needs. Moreover, healthcare professionals, carers and stakeholders also differ in their informational, practical and technological needs. This workshop aims to connect the more theoretical work in user modelling and personalisation with the more grounded needs of healthcare workers and manufacturers to promote research that is timely, innovative, and focused on the needs of users.

1 Introduction

We have reached a critical point in Healthcare where both professionals and patients alike have the technology available to them to give and receive personalised health support. The WHO [8] has recognised the importance of the eHealth industry in improving the quality of care and encourages investment in this area. This eHealth technology can be used in a diverse range of areas to promote access, improve efficiency and enhance quality within healthcare. Key goals in this field are to facilitate personalised health information to promote self-management, to identify and act upon support needs, to improve communication between patients and healthcare workers, to assist with the use of medicine and assistive technology and to generally maximise practice efficiency and inform decision-making between healthcare workers [4].

The 2015 International Workshop on Personalisation and Adaptation in Technology for Health (PATH 2015) showcases innovative user modelling and personalisation research that focuses on promoting access, improving efficiency and enhancing quality within healthcare. PATH aims to promote discussion between multidisciplinary researchers on how personalisation and adaptation can be used

to optimise outcomes in the healthcare sector. It builds on five related previous workshops presented at UM 2005, UM 2007, 21st IEEE CBMS (2008), AIME 2009 and EHealth 2010 and a special issue on Personalisation for E-Health in UMUAI 2011.

2 Themes

This workshop focused on the many aspects of personalisation for health delivery, related to e-Health environments. Topics of interest included, but were not limited to, the following areas:

- Adaptive and personalised e-Health information systems (including adaptive content, search and interface)
- Tailored health education and advice (written and online)
- Promoting trust and compliance to health advice
- Personalised assistance, including for special citizens (e.g. disabled, elderly)
- Personalisation in chronic care (e.g. asthma or diabetes management) as opposed to acute care (e.g. ICU setting)
- Novel personalisation approaches to facilitate improved communication between healthcare professionals and patients
- Personalisation and user modelling to support patient self-management
- Privacy issues for health related user models
- Personalisation based both on biometric or genomic factors and clinical information
- Tailored decision support (for patients and practitioners)
- Supporting the implementation of guidelines and protocols in healthcare
- Models of user learning, knowledge, attitude and behaviour change (including compliance)
- Tailored behaviour change interventions to promote healthy living (e.g. diet, exercise).
- Business models (personalisation to various stakeholders)
- Ontologies for user models (including provenance) for tailored health care delivery
- Methods for evaluating user satisfaction with personalised ehealth systems (weblog analysis, tracking users, quantitative and qualitative methods)
- Reports on evaluation studies of personalised eHealth systems
- Mobile and wearable healthcare systems for the personalisation of eHealth
- Smart Healthcare (Internet of Things) systems
- Tailored emotional support for patients, healthcare professionals and carers
- Innovative representations of personal health profiles and models
- Personalisation in online support for health and wellbeing
- Using personalisation in technology to support medical procedures
- Healthcare systems that adapt to physiological and environmental cues

3 Contributions

A peer-reviewed process was carried out to select the workshop papers, with three members of the Program and Organizing Committee reviewing each paper. This resulted in 6 accepted submissions (1 rejected), which discuss ideas and progress on several interesting topics, including physical activity coaching, personalising health reminders, unobtrusive health monitoring, adapting emotional support to personality, textile sensors and the evaluation of health-monitoring interventions.

Wolvers and Vollenbroek-Hutten [7] present a study aiming to develop an intervention strategy to decrease cancer-related fatigue by integrating a physical activity coaching system in primary care physiotherapy. Interviews were conducted, resulting in a 9-week intervention strategy that could benefit a large variety of patients with chronic cancer-related fatigue, that has the potential to be integrated successfully in current primary health care, and is currently being evaluated in a large randomised controlled trial.

Dennis et al. [3] explore the potential of personalising health reminders to melanoma patients based on their conscientiousness, for use in an eHealth intervention. Participants rated 6 reminders developed through persuasive principles and chose their preferred reminder and an alternative reminder to send if that one failed. They found that conscientiousness had an effect on both the ratings of reminder types and the most preferred reminders selected by participants.

Cabrita et al. [1] present the results of a pilot study on monitoring physical functioning in older adults, using an accelerometer and experience sampling method on a smartphone. They found that location, social interactions, type of activities and day of the week significantly influence the participants' daily activity level. They plan to use the results in the further development of an unobtrusive monitoring and coaching system to encourage daily active behaviour.

Smith et al. [6] investigate whether adaptation to the personality trait 'Emotional Stability' affects the amount and type of emotional support a fictional informal carer is given. They found that participants gave more praise to the carer with high Emotional Stability carer with a trend towards other support types for the carer with low Emotional Stability. These results will be used when developing an intelligent agent to provide tailored emotional support to carers experiencing stress.

Coyle et al. [2] propose that wearable technology can provide the capacity to track long-term health trends, but in order for this to be adopted, the technology must be easy to use and comfortable to wear. This work discusses a fabric stretch sensor glove that can measure body movements for the home assessment of Rheumatoid Arthritis. The aim is to have a better understanding of joint stiffness by monitoring dynamic movements of the hand at different times of the day. Having such information can help to develop a personalised approach to management and treatment of various chronic conditions.

Nieroda et al. [5] use principles from Regulatory Focus Theory (RFT) and Regulatory Fit Theory (RF) to facilitate the understanding of (non)acceptance of mobile applications (apps) for health self management. RFT was deployed to position different apps as strategies aligned with promotion/prevention goal ori-

entation, and the Promotion-Prevention (PM-PV) scale was developed to measure this. It was established that RF principles can be used to understand that promotion/prevention congruence is important in the acceptance of mHealth apps.

All these contributions are testimony to a vibrant field of research in this area, and will ensure a fruitful exchange of ideas at the workshop.

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