

Welcome message from the Editors

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On behalf of the Editorial Board, we welcome you to the first Special Issue of the EAI Transactions on Pervasive Health and Technology. We are excited to launch the journal through this first special issue on “Mobile and Wireless Technologies for Healthcare”, and we believe the topics of the journal will be of interest to the research community.

Health, one of the core topics of the journal, is becoming more and more intertwined with technology. This trend will only continue as we move in the era of personalised healthcare, where our genetic, behavioural and environmental factors will play an important role in generating individual phenotypes and targeted therapies.

Technology in general and monitoring technology in particular will help transform current healthcare by providing unprecedented insights into aspects of human behaviour and its interplay with the environmental factors.

Miniaturisation of sensing devices and their unobtrusiveness is contributing to this trend. Human behaviour has been traditionally difficult to understand, relying on subjective, self-reported information, while being a crucial factor in disease diagnosis and treatment, particularly for mental disorders [1], [2]. As such, the journal will seek to address the use of technology in diverse areas of healthcare, including the following broad topics:

- Pervasive Healthcare Management
- Understanding healthcare actors
- Knowledge representation and reasoning
- Application of pervasive healthcare technologies and out of lab case studies
- Public health approaches and large-scale health initiatives
- Economic impact of pervasive healthcare systems when targeting societal health challenges

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This inaugural special issue on “Mobile and Wireless Technologies for Healthcare” presents 6 scientific contributions.

The first paper [3] explores the feasibility of using motion-sensitive sensors embedded in Google Glass, a head-mounted wearable device, to robustly measure physiological signals of the wearer. Authors developed new methods to use the Glass’s accelerometer, gyroscope, and camera to extract pulse and respiratory waves. Specifically, they showed that a head-mounted gyroscope sensor has improved performance versus more commonly explored sensors (e.g., accelerometers). They also demonstrated how a head-mounted camera can be used to capture the physiological responses of the wearer.

The second paper [4] explores tablets and similar mobile devices as the medium of communication between robotic home assistants and their users. Research results in human-robot interaction are intended to help the tele-health community circumvent technical shortcomings, improve user acceptance, and maximize the quality of data collected by robotic home assistants.

The third paper [5] presents knowledge and experience in deploying efficient and versatile Wireless Sensor Networks (WSNs) in home environments. Authors discuss several challenges ranging from identification and specification of the main requirements, to possible implementation approaches. Through this process, an efficient and intelligent practical platform is proposed that supports diverse sensors and communication technologies.

The fourth paper [6] reports on experiences in e-Health platforms and services for supporting medical research related to chronic diseases. Authors describe: roles and aims behind electronic health records, applicable legal and standardizations frameworks, commercial and open-source implementations of such systems, and specific adaptations for chronic illnesses.

The fifth paper [7] discusses how mobile technology can achieve collaborative disease management (CDM) for people living with Type 2 diabetes. Specifically, authors

introduce and validate a framework for CDM using mobile technologies. The latter allows people with diabetes to learn from each others' experiences. Two user studies are conducted, one in a controlled environment, and one in personal settings.

The sixth paper [8] describes a novel approach that offers integrated rehabilitation training to stroke patients. This is done using a gaming approach, combined with a range of advanced technologies and immersive user interfaces. The proposed approach puts patients and caretakers in control of the rehabilitation protocols, while enabling patients to perform training within their own home environment.

For the preparation of this first issue we would like to acknowledge the work of all our Editors, reviewers and authors who have positively supported this publication initiative. We will be happy to receive suggestions from our readers, including possible proposals for future special issues.

We hope you will find this first issue thought provoking for your research in the field of Pervasive Health and Technology, and will consider this journal for your future dissemination work.

About the Editors



Asimina Kiourti, PhD is a Senior Research Associate at the ElectroScience Lab of The Ohio State University. Prior to that, she received the Ph.D. degree in Electrical and Computer Engineering from the National Technical University of Athens, Greece (2013) and the M.Sc. degree from University College

London, UK (2009).

Dr Kiourti has (co-) authored more than 20 journal papers, 40 conference papers, 6 book chapters, and 3 patent applications. She has received more than 40 awards and scholarships, among which, the IEEE EMB-S "Young Investigator Award" (2014), the IEEE MTT-S "Graduate Fellowship for Medical Applications" (2012), and the IEEE AP-S "Doctoral Research Award" (2011). Her research interests include: RF antennas and circuits for medical applications, medical sensing, flexible textile and polymer-based antennas and RF circuits, and bioelectromagnetics.



Venet Osmani, PhD is senior researcher CREATE-NET, where he joined in 2008. His main research interests are in data mining techniques that can be used to analyse human behaviour and how this information can be applied in healthcare

applications, specifically patient monitoring and correlation with disease.

He was involved in FP7 MONARCA project that carried out a study to understand behaviour of bipolar disorder patients through unobtrusive monitoring technologies and FP7 INTERSTRESS that used virtual reality and biofeedback technologies to combat stress. Currently he is involved in project on post-stroke rehabilitation – FP7 REHAB@HOME through persuasive gamification.

He is a reviewer for a number of journals, has been Guest Editor for a number of Special Issues, is Steering Committee member of Pervasive Health conference and was PC Chair of the 2013 edition. He lectures at University of Trento (Faculty of Cognitive Sciences) and has supervised to completion a number of PhD students. During 2009 he was a visiting researcher at Georgia Institute of Technology, USA. Previously he was with Telecommunications Software & Systems Group at Waterford Institute of Technology in Ireland where he finished his PhD, during which he was a visiting research student at Institute for Infocomm Research (I2R) in Singapore.

References

- [1] A. Grunerbl, A. Muaremi, V. Osmani, G. Bahle, S. Ohler, G. Troster, O. Mayora, C. Haring, and P. Lukowicz, "Smartphone-Based Recognition of States and State Changes in Bipolar Disorder Patients," *Biomedical and Health Informatics, IEEE Journal of*, vol. 19, no. 1. pp. 140–148, 2015.
- [2] A. Gruenerbl, V. Osmani, G. Bahle, J. C. Carrasco, S. Oehler, O. Mayora, C. Haring, and P. Lukowicz, "Using smart phone mobility traces for the diagnosis of depressive and manic episodes in bipolar patients," in *Proceedings of the 5th Augmented Human International Conference on - AH '14*, 2014, pp. 1–8.
- [3] J. Hernandez, Y. Li, J.M. Rehg, and R.W. Picard, "Cardiac and respiratory parameter estimation using head-mounted motion-sensitive sensors," *EAI Transactions on Pervasive Health and Technology*, Vol. 1, e2, DOI:10.4108/phant.1.1.e2, 2015.
- [4] M. Dagioglou, A. Lydakias, F. Kirstein, A.S. Dogruoz, and S. Konstantopoulos, "Interacting with and via mobile devices and mobile robots in an assisted living setting," *EAI Transactions on Pervasive Health and Technology*, Vol. 1, e3, DOI:10.4108/phant.1.1.e3, 2015.
- [5] C. Antonopoulos, T. Panagiotakopoulos, C. Panagiotou, G. Touliafos, S. Koubias, A. Kameas, and N.S. Voros, "On developing a novel versatile framework for heterogeneous home monitoring WSN networks," *EAI Transactions on Pervasive Health and Technology*, Vol. 1, e4, DOI:10.4108/phant.1.1.e4, 2015.
- [6] A. Krukowski and E. Vogiatzaki, "Adaptations of personal health record platform for medical research on chronic diseases," *EAI Transactions on Pervasive Health and Technology*, Vol.1, e5. DOI:10.4108/phant.1.1.e5, 2015.
- [7] S. Sultan and P. Mohan, "An investigation into the role of mobile technology in collaborative disease management for persons living with Type 2 diabetes," *EAI Transactions on Pervasive Health and Technology*, Vol.1, e6, DOI:10.4108/phant.1.1.e6, 2015.
- [8] E. Vogiatzaki and A. Krukowski, "Rehabilitation after stroke using immersive user interfaces in 3D virtual and augmented gaming environments," *EAI Transactions on Pervasive Health and Technology*, Vol.1, e7, DOI:10.4108/phant.1.1.e7, 2015.