

# Preface

It has been shown that the quality of life for people remaining in their own homes is generally better than for those who are institutionalised. Moreover, the cost for institutional care can be much higher than the cost of care for a patient at home. To balance this situation, efforts must be made to move the services and care available in institutions to the home environment. Thus, society poses new challenges, demanding systems that overcome this issue.

Personal assistants (PAs) are a relatively new concept, advancing the Cognitive Orthotics concept, which is only focused on direct assistance to people with cognitive or physical disabilities. The aim is to expand the Cognitive Orthotics area to include complex platforms that include sensors, actuators, monitoring abilities and decision processes.

PA domain contains technologies such as cognitive assistants, multi-agent systems, robotics and applications (such as e-health and e-learning), among others. Essentially, PA is focused on people and their disabilities, providing tools that best fit them using personalisation methods. They have been typically developed to perceive the intrinsic mechanisms of human cognition such as reasoning, learning, memorising, acting and adapting; to discover the thought process leading to each decision; and to build systems that can emulate those thought processes and make decisions or suggestions.

PA can range from a medication reminder to a messaging system that connects its users with their relatives. New developments like the Internet of Things and the increasing amount of computing power that hand-held devices have allowed the development of environments that were until now unavailable through embedded systems. Therefore, there are a lot of implementation options open for development on this area. This book is intended to provide an overview of the research being carried out in the interdisciplinary area of personal assistants and cognitively inspired systems.

The contents of the book were divided into the following parts: Introduction, Reasoning, Health, Personalisation, Robotics, Ethic and Social Issues.

The Introduction presents an overview of the area and the projects that constitute it. The Reasoning presents the knowledge processes that affect PA. The Health

presents application of PA in health environments. The Personalisation presents solutions that are directly related to how the PA can adjust to the users. The Robotics presents application of PA through robotic systems. And finally, the Ethic and Social Issues present the legal perspective of how the PA affects the society.

This book counts with international contributions, from countries such as Argentina, Republic of Colombia, Russia, Spain, Portugal, the USA, which provide different perspectives elated to their own culture, being composed by 12 chapters.

In closing we would like to thank the reviewers who helped to increase the excellency of this book.

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