Preface

This special issue of the Journal of Cybernetics and Information Technologies (CIT) contains the proceedings from the AIMSA'2012 Workshop on Advances in Robot Learning and Human-Robot Interaction that was held on 12th of September 2012 in Varna, Bulgaria.

The workshop is organized by the IEEE Technical Committee on Robot Learning, with chairs: Petar Kormushev, Edwin Olson, Ashutosh Saxena, and Wataru Takano. The focus is on recent advances in applying machine learning and AI approaches to robotics in general and in particular to the domain of human-robot interaction. The interest in applying machine learning approaches within the robotics community is continuously growing, in response to the fact that robot hardware is progressively becoming more complex. The conventional, manually-engineered solutions to robot perception and control are reaching their limits, and there is an acute need for automated learning methods to cope with the ever-increasing complexity of robots.

This special issue contains nine selected papers, presenting results on a wide range of robotic platforms, such as robot arm manipulators, humanoid robots, and quadruped robots. Both theoretical and practical results are presented, on a variety of real-world scenarios for robot task learning and human-robot interaction. In addition, the issue contains abstracts of two invited talks, in which the invited speakers present the latest research developments in their respective fields. Assistant Professor Alexander Stoytchev, who is the Director of the Developmental Robotics Laboratory at Iowa State University, USA, presents an overview of the progress in the developmental approach to robotic intelligence, as well as the latest results in this field from his laboratory. Associate Professor Yukie Nagai, from Osaka University, Japan, presents recent advances in human-robot interaction, with focus on how the interaction shapes the way robots learn.

We hope that the readers will find this issue stimulating and inspiring further research.

We would like to cordially thank the local organizer of the workshop, which is the Institute of Information and Communication Technologies (IICT), Bulgarian Academy of Sciences, and especially to Associate Professor Gennady Agre, for the support and guidance throughout the preparation of this workshop.

Petar Kormushev, Italian Institute of Technology, Italy

Edwin Olson, University of Michigan, USA

Ashutosh Saxena, Cornell University, USA

Wataru Takano, University of Tokyo, Japan