Preface

The volume "Educational Robotics in the Makers' Era" contains papers presented at the International Conference "Educational Robotics 2016 - EDUROBOTICS 2016" held on November 25, 2016 in Athens. The conference was organized by EDUMOTIVA (Greece, www.edumotiva.eu), the Department of Information Engineering, University of Padua (Italy, http://www.dei.unipd.it/en) and the INNOVATHENS – Hub of Innovation & Entrepreneurship Technopolis City of Athens (Greece, http://www.innovathens.gr). The conference was organized in the framework of the European Robotics Week 2016.

The conference history dates back to 2008 when the first International Workshop entitled "Teaching Robotics and Teaching With Robotics - TRTWR" was organized in Venice in the context of the TERECoP project (www.terecop.eu). The success of that workshop resulted in a series of TRTWR workshops held in Darmstadt (2010), in Riva Del Garda (2012) and in Padua (2014). Publications from those workshops have included open online proceedings and two special issues in the journals: Themes in Science & Technology Education, 2013 and Robotics & Autonomous Systems Journal, 2016, Elsevier.

The interest in the continuation of the international workshops and the previous successful editions witness the continuously growing interest in educational robotics worldwide and have enabled the building of a community of researchers and educators with interest in this field across EU and beyond. In 2016, encouraged by the success of the TRTWR series of workshops we decided to upgrade the workshops series to an International Conference with the (simpler) title EDUROBOTICS 2016 standing for Educational Robotics International Conference 2016.

The former TRTWR workshops have built on pedagogies inspired from constructivism and constructionism (Piaget, Papert). The EDUROBOTICS 2016 conference continued on the same pedagogical path and explored how educational robotics can support the development of STEAM (Science, Technology, Engineering, Arts and Math) education and the 21st century skills: creativity, critical thinking, team working, and problem solving.

The central theme this year was "Educational Robotics in the Makers' Era". The Maker Movement has emerged recently in education with the great promise to democratize access to opportunities for learning by making and the 21st century digital making technologies. Though educational robotics preceded the maker movement years ago, they share common roots in Papert's constructionism and similar vision for an education that will enable learners to make their own (robotic or not) artifacts using 21st century technologies. Hence, it is worthy for educational robotics community to explore further connections with digital fabrication, DIY electronics and other making technologies and position itself in the broader maker movement.

The Program Committee received 28 submissions (24 full papers, 4 short papers) coming from eight different EU countries, USA, Canada, Russia, Israel, and Pakistan. Each submission was reviewed by at least 2, and on average 2.9, Program Committee members. Finally, the Committee decided to accept 14 full papers (acceptance rate 58%) and 8 papers for poster presentation. The program also included three invited talks by Meurig Beynon (University of Warwick, UK), Ilkka Jormanainen (University of Eastern Finland), and Alfredo Pina (Public University of Navarra, Spain).

The content of the book is organized in four sections.

1st section: Theory and practice in educational robotics (including the invited papers).

2nd section: Educational robotics projects in school and higher education.

3rd section: Methodologies in educational robotics.

4th section: Educational robotics and programming.

5th section: Short papers reporting good practices or work in progress presented in the conference as posters.

We thank the conference participants, academics, researchers, and educators from all the levels of education (primary, secondary and tertiary), and the young researchers and PhD and postgraduate students for their active participation and great contribution to the success of the conference and for authoring this book. Special thanks go to our Program Committee members who have reviewed the papers and provided important help to authors to improve their manuscripts.

Finally, this book is dedicated to the memory of Seymour Papert who passed away in 2016; the man who inspired the educational robotics community for years and whose theoretical work is behind educational robotics and the maker movement.

The co-editors

January 2017

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http://www.springer.com/978-3-319-55552-2

Educational Robotics in the Makers Era

ALIMISIS, D.; Moro, M.; Menegatti, E. (Eds.)
2017, XI, 258 p. 75 illus., Softcover
ISBN: 978-3-319-55552-2