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Preface

We are glad to present the proceedings of the 7th International Conference on Robotics in Education (RiE) held in Vienna, Austria, during April 14–15, 2016. The RiE is organized every year with the goal to provide researchers in the field of Educational Robotics the opportunity for the presentation of relevant novel researches in a strongly multidisciplinary context.

Educational Robotics is an innovative way for increasing the attractiveness of science education and scientific careers in the view of young people. Robotics represents a multidisciplinary and highly innovative domain encompassing physics, mathematics, informatics and even industrial design as well as social sciences. As a multidisciplinary field, it promotes the development of systems thinking and problem solving. Moreover, due to various application areas, teamwork, creativity and entrepreneurial skills are required for the design, programming and innovative exploitation of robots and robotic services. Robotics confronts learners with the four areas of Science, Technology, Engineering and Mathematics (STEM) through the design, creation and programming of tangible artifacts for creating personally meaningful objects and addressing real-world societal needs. As a consequence, it is regarded as very beneficial if engineering schools and university program studies include the teaching of both theoretical and practical knowledge on robotics. In this context current curricula need to be improved and new didactic approaches for an innovative education need to be developed for improving the STEM skills among young people. Moreover, an exploration of the multidisciplinary potential of robotics towards an innovative learning approach is required for fostering the pupils' and students' creativity leading to collaborative entrepreneurial, industrial and research careers in STEM.

In these proceedings we present the latest achievements in research and development in educational robotics. The book offers a range of methodologies for teaching robotics and presents various educational robotics curricula and activities. It includes dedicated chapters for the design and analysis of learning environments as well as evaluation means for measuring the impact of robotics on the students' learning success. Moreover, the book presents interesting programming approaches

as well as new applications, the latest tools, systems and components for using robotics. The presented applications cover the whole educative range, from elementary school to high school, college, university and beyond, for continuing education and possibly outreach and workforce development. The book provides a framework involving two complementary kinds of contributions: on the one hand on technical aspects and on the other hand on didactic matters. In total, 25 papers are part of these proceedings after careful revision. We would like to express our thanks to all authors who submitted papers to RiE 2016, and our congratulations to those whose papers were accepted.

This publication would not have been possible without the support of the RiE International Program Committee and the Conference Co-Chairs. The editors also wish to express their gratitude to the volunteer students and local staff, which significantly contributed to the success of the event. All of them deserve many thanks for having helped to attain the goal of providing a balanced event with a high level of scientific exchange and a pleasant environment. We acknowledge the use of the EasyChair conference system for the paper submission and review process. We would also like to thank Dr. Thomas Ditzinger and Springer for providing continuous assistance and advice whenever needed.

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