Preface

This volume of Communications in Computer and Information Science (CCIS) contains the post-proceedings of HELMeTO 2022, the fourth International Conference on Higher Education Learning Methodologies and Technologies Online, which took place during September 21–23, 2022 in Palermo, Italy.

The conference was organized by the Department of Mathematics and Computer Science at the University of Palermo and by the Institute of Educational Technology of the National Research Council of Italy. The 2022 edition of HELMeTO also marked the return of the event in presence, as the previous two editions had been held entirely online due to the Covid-19 emergency.

The growing interest in the topics of learning methodologies and technologies in higher education, and in particular in the interdisciplinary approach that characterizes this research field, suggested a change from a workshop format to a conference event, thus promoting a more international perspective. The success of this approach was highlighted by the 126 submissions received (almost double those received for the previous event) from more than 400 authors in 24 countries.

These numbers not only confirm the growth trend of an event that was born just four years ago (39 submissions in 2019, 59 in 2020, and 65 in 2021), but above all they consecrate HELMeTO as a key event for researchers and practitioners working in Higher Distance Education Institutions or studying Online Learning Methodologies to present and share their research in a multidisciplinary and international context.

The conference included two general tracks on Online pedagogy and learning methodologies and and on Learning technologies, data analytics and educational big data mining as well as their applications. Thanks to the growing attention that the conference has attracted over the years, this edition collected twelve special tracks, focusing on specific topics, previously proposed by their organizers and peer-reviewed by the Program Committee.

- Special Track 1 - Improving education via XR and AI
- Special Track 2 - Educational Approaches and Innovative Applications to Counteract Social Media Threats
- Special Track 3 - Hybrid Learning and Accessibility in higher education
- Special Track 4 - E-learning for providing "augmented" mathematics education at University level
- Special Track 5 - STEAM Education old and new challenges in distance teaching/learning approaches in Higher Education
- Special Track 6 - Online Faculty Development: Next Steps for Practice and Future Research
- Special Track 7 - Artificial Intelligence and Multimodal Technologies in Education (AI&MTEd '22)
- Special Track 8 - Experience-based training activities for online higher education
- Special Track 9 - Intelligent Analytics for Process-aware Higher Education

- Special Track 10 - The digital innovation of university teaching observed through the prism of emotions
- Special Track 11 - Empowering soft skills and digital competencies in higher education
- Special Track 12 - Manufacturing Education for a Sustainable fourth industrial revolution

An international Program/Scientific Committee with members from 17 countries (Austria, China, Cyprus, Ecuador, France, Germany, Greece, Italy, Morocco, Palestine, Portugal, Slovakia, Spain, Sweden, Turkey, UK, USA) was in charge of peer-reviewing the 126 papers submitted to HELMeTO 2022; 105 papers were selected for presentation at the conference. A final set of the best 59 papers (47% of the original submissions) were selected and extended for publication in this book after a separate double-blind peer-review process performed by at least three members of the Program/Scientific Committee.

We thank all the authors for their contributions and presentations, for their efforts, and for their presence at the event. Similarly, we would like to thank all the committee members, organizers, and contributors, for their involvement and help in the process of preparing and hosting both the conference and this book. Our thanks go also to the University of Palermo and the Institute of Educational Technology of the National Research Council of Italy and to SIREM (Società Italiana di Ricerca sull'Educazione Mediale).

February 2023   Giovanni Fulantelli
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