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Artificial Intelligence in Education

23rd International Conference, AIED 2022
Durham, UK, July 27–31, 2022
Proceedings, Part I

1
Part I

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Preface

The 23rd International Conference on Artificial Intelligence in Education (AIED 2022) was hosted by Durham University, UK. It was organized in a hybrid face-to-face and online format. This allowed participants to meet in person after two years of running AIED online only, which was a welcome change. However, as the world was only just emerging from the COVID-19 pandemic and travel for some attendees was still a challenge, online participation was also supported. AIED 2022 was the next in a longstanding series of annual international conferences for the presentation of high-quality research on intelligent systems and the cognitive sciences for the improvement and advancement of education. It was hosted by the prestigious International Artificial Intelligence in Education Society, a global association of researchers and academics who specialize in the many fields that comprise AIED, including computer science, learning sciences, educational data mining, game design, psychology, sociology, linguistics, and many others.

The theme for the AIED 2022 conference was “AI in Education: Bridging the gap between academia, business, and non-profit in preparing future-proof generations towards ubiquitous AI.” The conference hoped to stimulate discussion on how AI shapes and can shape education for all sectors, how to advance the science and engineering of intelligent interactive learning systems, and how to promote broad adoption. Engaging with the various stakeholders – researchers, educational practitioners, businesses, policy makers, as well as teachers and students – the conference set a wider agenda on how novel research ideas can meet practical needs to build effective intelligent human-technology ecosystems that support learning.

AIED 2022 attracted broad participation. We received 243 submissions for the main program, of which 197 were submitted as full papers, 37 were submitted as short papers, and nine were submitted as extended abstracts. Of the full paper submissions, 40 were accepted as full papers and another 40 were accepted as short papers. The acceptance rate for both full papers and short papers was thus 20%.

Beyond paper presentations and keynotes, the conference also included a Doctoral Consortium Track, an Industry and Innovation Track, Interactive Events, Posters/Late-Breaking Results, and a Practitioner Track. The submissions for all these tracks underwent a rigorous peer-review process. Each submission was reviewed by at least two members of the AIED community, assigned by the corresponding track organizers who then took the final decision about acceptance. The conference also included keynotes, panels, and workshops and tutorials.

For making AIED 2022 possible, we thank the AIED 2022 Organizing Committee, the hundreds of Program Committee members, the Senior Program Committee members, the AIED Proceedings Chair Irene-Angelica Chounta, and our Program

Chair assistant Jonathan DL. Casano. They all gave of their time and expertise generously and helped with shaping a stimulating AIED 2022 conference. We are extremely grateful to everyone!

July 2022

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Invited Keynotes

The Role of AI and Gamification in the Future of Healthcare

Lucia Pannese

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Abstract. In this keynote, Lucia Pannese shows how AI and Gamification support medical practices and the impact that has on several health and care interventions. Presenting a series of different examples about digital approaches to health and care, this talk looks at the future of healthcare and to how learning and development needs will be affected if AI and machine learning support decision making and behavioural change.

The talk will start with a focus on the pervasiveness of gamification in everyday life, something that usually people do not even recognize, given the narrow understanding currently attributed to this life skill. After sharing definitions, understanding and some examples of gamification, game-based approaches and enabling technologies for health and care, Lucia, who is a mathematician by profession, will point at a series of critical issues that are too often ignored in practical applications if machine learning and AI are applied in these contexts. She will provocatively introduce some concepts of usefulness, quantity of data, bias, measurement, clinical responsibility, clinical observation, instability of models to show how complex and risky it is to produce an AI based system.

This talk aims to trigger reflection and critical analysis at a time when everyone is talking about AI and the danger of this extremely complex concept just becoming a “buzzword” to attract attention without consideration of whether these solutions are genuinely innovative and useful.

Learning Engineering: Looking Back, Looking Forward

Kumar Garg

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Abstract. In this fireside chat, Kumar Garg will discuss some of the biggest wins in learning engineering to date as well as discuss opportunities like addressing the lack of large n studies. He will also outline some of Schmidt Futures' recent efforts including a new Learning Engineering Virtual Institute.

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