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Titolo	Mathematics Education in the Age of Artificial Intelligence : How Artificial Intelligence can Serve Mathematical Human Learning // edited by Philippe R. Richard, M. Pilar Vélez, Steven Van Vaerenbergh
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ISBN	3-030-86909-1
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Descrizione fisica	1 online resource (464 pages)
Collana	Mathematics Education in the Digital Era, , 2211-8144 ; ; 17
Disciplina	510.71 510.78
Soggetti	Mathematics - Study and teaching Artificial intelligence Teachers - Training of Machine learning Learning, Psychology of Mathematics Education Artificial Intelligence Teaching and Teacher Education Machine Learning Learning Theory Intel·ligència artificial Ensenyament assistit per ordinador Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Part I: Creation of AI milieus to work on mathematics -- Chapter 1. Evolution of automatic proving and reasoning technologies and dynamics in geometry -- Chapter 2. Exploring dynamic geometry through immersive virtual reality -- Chapter 3. Computing power and automated reasoning tools for performing mathematical work -- Chapter 4. Designing atutorial system for learning mathematics -- Chapter 5. Technological innovations in math education to foster

creativities in schools in the era of artificial intelligence -- Part II: AI-supported learning of mathematics -- Chapter 6. Classroom Implementation of STEAM Education through IA and other technology -- Chapter 7. Understanding and creating to better understand instrumented reasoning using tools and IA devices -- Chapter 8. Automated exploration in mathematics -- Chapter 9. Artificial intelligence and mathematics working over monuments and other realities -- Chapter 10. Emerging technologies and emerging types of learning in mathematics education -- Part III: Coordinating "usual" paper/pencil techniques and "new" AI-aided educational working spaces -- Chapter 11. Digital technology and its various uses from the instrumental perspective -- Chapter 12. Innovative CAS technology use in mathematics teaching and assessment -- Chapter 13. Learning itineraries in pre-service teacher education -- Chapter 14. One method of trisecting an angle and its interpretation for teaching purposes using a dynamic geometry and computer algebra system -- Chapter 15. Rearrangement method for area of a circle: complex paths from historical roots to modern visual and dynamic models in discovery-based teaching approach -- Chapter 16. Teaching Programming to Mathematical Scientists -- Conclusion.

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### Sommario/riassunto

This book highlights the contribution of artificial intelligence for mathematics education. It provides concrete ideas supported by mathematical work obtained through dynamic international collaboration, and discusses the flourishing of new mathematics in the contemporary world from a sustainable development perspective. Over the past thirty years, artificial intelligence has gradually infiltrated all facets of society. When it is deployed in interaction with the human designer or user, AI certainly raises new ethical questions. But as soon as it aims to augment intelligence in a kind of human-machine partnership, it goes to the heart of knowledge development and the very performance of work. The proposed themes and the sections of the book address original issues relating to the creation of AI milieus to work on mathematics, to the AI-supported learning of mathematics and to the coordination of « usual » paper/pencil techniques and « new » AI-aided educational working spaces. The authors of the book and the coordinators of each section are all established specialists in mathematics didactics, mathematics and computer science. In summary, this book is a must-read for everyone interested in the teaching and learning of mathematics, and it concerns the interaction between the human and the machine in both directions. It contains ideas, questions and inspiration that invite to take up the challenge of Artificial Intelligence contributing to Mathematical Human Learning.

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