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| 1. | Record Nr. | UNINA9910484947303321 |
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| | Titolo | Advances in Social Networking-based Learning : Machine Learning-based User Modelling and Sentiment Analysis / / by Christos Troussas, Maria Virvou |
| | Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020 |
| | ISBN | 3-030-39130-2 |
| | Edizione | [1st ed. 2020.] |
| | Descrizione fisica | 1 online resource (xii, 176 pages) |
| | Collana | Intelligent Systems Reference Library, , 1868-4394 ; ; 181 |
| | Disciplina | 371.334 |
| | Soggetti | Computational intelligence |
| | | Artificial intelligence |
| | | Educational technology |
| | | Computational Intelligence |
| | | Artificial Intelligence |
| | | Technology and Digital Education |
| | Lingua di pubblicazione | Inglese |
| | Formato | Materiale a stampa |
| | Livello bibliografico | Monografia |
| | Nota di contenuto | Introduction -- Related Work -- Intelligent, Adaptive and social e-learning in POLYGLOT. . |
| | Sommario/riassunto | This book discusses three important, hot research issues: social networking-based learning, machine learning-based user modeling and sentiment analysis. Although these three technologies have been widely used by researchers around the globe by academic disciplines and by R&D departments in the IT industry, they have not yet been used extensively for the purposes of education. The authors present a novel approach that uses adaptive hypermedia in e-learning models to personalize educational content and learning resources based on the needs and preferences of individual learners. According to reports, in 2018 the vast majority of internet users worldwide are active on social networks, and the global average social network penetration rate as of 2018 is close to half the population. Employing social networking technologies in the field of education allows the latest technological advances to be used to create interactive educational environments |

where students can learn, collaborate with peers and communicate with tutors while benefiting from a social and pedagogical structure similar to a real class. The book first discusses in detail the current trend of social networking-based learning. It then provides a novel framework that moves further away from digital learning technologies while incorporating a wide range of recent advances to provide solutions to future challenges. This approach incorporates machine learning to the student-modeling component, which also uses conceptual frameworks and pedagogical theories in order to further promote individualization and adaptivity in e-learning environments. Moreover, it examines error diagnosis, misconceptions, tailored testing and collaboration between students are examined and proposes new approaches for these modules. Sentiment analysis is also incorporated into the general framework, supporting personalized learning by considering the user's emotional state, and creating a user-friendly learning environment tailored to students' needs. Support for students, in the form of motivation, completes the framework. This book helps researchers in the field of knowledge-based software engineering to build more sophisticated personalized educational software, while retaining a high level of adaptivity and user-friendliness within human–computer interactions. Furthermore, it is a valuable resource for educators and software developers designing and implementing intelligent tutoring systems and adaptive educational hypermedia systems. .