Data Mining and Learning Analytics: Applications in Educational Research
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DESCRIPTION

Addresses the impacts of data mining on education and reviews applications in educational research teaching, and learning

This book discusses the insights, challenges, issues, expectations, and practical implementation of data mining (DM) within educational mandates. Initial series of chapters offer a general overview of DM, Learning Analytics (LA), and data collection models in the context of educational research, while also defining and discussing data mining’s four guiding principles—prediction, clustering, rule association, and outlier detection. The next series of chapters showcase the pedagogical applications of Educational Data Mining (EDM) and feature case studies drawn from Business, Humanities, Health Sciences, Linguistics, and Physical Sciences education that serve to highlight the successes and some of the limitations of data mining research applications in educational settings. The remaining chapters focus exclusively on EDM’s emerging role in helping to advance educational research—from identifying at-risk students and closing socioeconomic gaps in achievement to aiding in teacher evaluation and facilitating peer conferencing. This book features contributions from international experts in a variety of fields.

• Includes case studies where data mining techniques have been effectively applied to advance teaching and learning
• Addresses applications of data mining in educational research, including: social networking and education; policy and legislation in the classroom; and identification of at-risk students
• Explores Massive Open Online Courses (MOOCs) to study the effectiveness of online networks in promoting learning and understanding the communication patterns among users and students
• Features supplementary resources including a primer on foundational aspects of educational mining and learning analytics

*Data Mining and Learning Analytics: Applications in Educational Research* is written for both scientists in EDM and educators interested in using and integrating DM and LA to improve education and advance educational research.

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**ABOUT THE AUTHOR**

**Samira ElAtia** is Associate Professor of Education at The University of Alberta, Canada. She has published numerous articles and book chapters on topics relating to the use of technology to support pedagogical research and education in higher education. Her current research focuses on using e-learning environment and big data for fair and valid longitudinal assessment of, and for, learning within higher education.

**Donald Ipperciel** is Principal and Professor at Glendon College, York University, Toronto, Canada and was the Canadian Research Chair in Political Philosophy and Canadian Studies between 2002 and 2012. He has authored several books and has contributed chapters and articles in more than 60 publications. Ipperciel has dedicated many years of research on the questions of e-learning and using technology in education. He is co-editor of the Canadian Journal of Learning and Technology since 2010.

**Osmar R. Zaiane** is Professor of Computing Science at the University of Alberta, Canada and Scientific Director of the Alberta Innovates Centre of Machine Learning. A renowned researcher and computer scientist, Dr. Zaiane is former Secretary Treasurer of the Association for Computing Machinery (ACM) Special Interest Group on Knowledge Discovery and Data Mining. He obtained the IEEE ICDM Outstanding Service Award in 2009 as well as the ACM SIGKDD Service Award the following year.

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**SERIES**

Wiley Series on Methods and Applications in Data Mining

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