The abundance of data and the rise of new quantitative and statistical techniques have created a promising area: data analytics. This combination of a culture of data-driven decision making and techniques to include domain knowledge allows organizations to exploit big data analytics in their evaluation and decision processes. Also, in education and learning, big data analytics is being used to enhance the learning process, to evaluate
efficiency, to improve feedback, and to enrich the learning experience. As every step a student takes in the online world can be traced, analyzed, and used, there are plenty of opportunities to improve the learning process of students. First, data analytics techniques can be used to enhance the student’s learning process by providing real-time feedback, or by enriching the learning experience. Second, data analytics can be used to support the instructor or teacher. Using data analytics, the instructor can better trace, and take targeted actions to improve, the learning process of the student. Third, there are possibilities in using data analytics to measure the performance of instructors. Finally, for policy makers, it is often unclear how schools use their available resources to "produce" outcomes. By combining structured and unstructured data from various sources, data analytics might provide a solution for governments that aim to monitor the performance of schools more closely. Data analytics in education should not be the domain of a single discipline. Economists should discuss the possibilities, issues, and normative questions with a multidisciplinary team of pedagogists, philosophers, computer scientists, and sociologists. By bringing together various disciplines, a more comprehensive answer can be formulated to the challenges ahead. This book starts this discussion by highlighting some economic perspectives on the use of data analytics in education. The book begins a rich, multidisciplinary discussion that may make data analytics in education seem as natural as a teacher in front of a classroom.

Data Mining and Big Data

This book constitutes the proceedings of the 15th International Conference on Advanced Data Mining and Applications, ADMA 2019, held in Dalian, China in November 2019. The 39 full papers presented together with 26 short papers and 2 demo papers were carefully reviewed and selected from 170 submissions. The papers were organized in topical sections named: Data Mining Foundations; Classification and Clustering Methods; Recommender Systems; Social Network and Social Media; Behavior Modeling and User Profiling; Text and Multimedia Mining; Spatial-Temporal Data; Medical and Healthcare Data/Decision Analytics; and Other Applications.

Advancing Educational Research With Emerging Technology

Multiple intelligences (MI) as a cognitive psychology theory has significantly influenced learning and teaching. Research has demonstrated a strong association between individual intelligences and their cognitive processes and behaviors. However, it remains unknown how each of or a combination of these intelligences can be effectively optimized through instructional intervention, particularly through the use of emerging learning technology. On the
other hand, while efforts have been made to unveil the relationship between information and communication technology (ICT) and individual learner performance, there is a lack of knowledge in how MI theory may guide the use of ICTs to enhance learning opportunities for students. Examining Multiple Intelligences and Digital Technologies for Enhanced Learning Opportunities is an essential reference book that generates new knowledge about how ICTs can be utilized to promote MI in various formal and informal learning settings. Featuring a range of topics such as augmented reality, learning analytics, and mobile learning, this book is ideal for teachers, instructional designers, curriculum developers, ICT specialists, educational professionals, administrators, instructors, academicians, and researchers.

Modern Approach to Educational Data Mining and Its Applications

Handbook of Educational Data Mining (EDM) provides a thorough overview of the current state of knowledge in this area. The first part of the book includes nine surveys and tutorials on the principal data mining techniques that have been applied in education. The second part presents a set of 25 case studies that give a rich overview of the problems that EDM has addressed. Researchers at the Forefront of the Field Discuss Essential Topics and the Latest Advances With contributions by well-known researchers from a variety of fields, the book reflects the multidisciplinary nature of the EDM community. It brings the educational and data mining communities together, helping education experts understand what types of questions EDM can address and helping data miners understand what types of questions are important to educational design and educational decision making. Encouraging readers to integrate EDM into their research and practice, this timely handbook offers a broad, accessible treatment of essential EDM techniques and applications. It provides an excellent first step for newcomers to the EDM community and for active researchers to keep abreast of recent developments in the field.

Enhancement of Teaching and Learning

Handbook of Educational Data Mining (EDM) provides a thorough overview of the current state of knowledge in this area. The first part of the book includes nine surveys and tutorials on the principal data mining techniques that have been applied in education. The second part presents a set of 25 case studies that give a rich overview of the problems that EDM has addressed. Researchers at the Forefront of the Field Discuss Essential Topics and the Latest Advances With contributions by well-known researchers from a variety of fields, the book reflects the multidisciplinary nature of the EDM community. It brings the educational and data mining communities together, helping education experts understand
what types of questions EDM can address and helping data miners understand what types of questions are important to educational design and educational decision making. Encouraging readers to integrate EDM into their research and practice, this timely handbook offers a broad, accessible treatment of essential EDM techniques and applications. It provides an excellent first step for newcomers to the EDM community and for active researchers to keep abreast of recent developments in the field.

**Educational Data Mining with R and Rattle**

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.

**Serious Games Analytics**

This book constitutes the refereed proceedings of the 12th Industrial Conference on Data Mining, ICDM 2012, held in Berlin, Germany in July 2012. The 22 revised full papers presented were carefully reviewed and selected from 97 submissions. The papers are
organized in topical sections on data mining in medicine and biology; data mining for energy industry; data mining in traffic and logistic; data mining in telecommunication; data mining in engineering; theory in data mining; theory in data mining: clustering; theory in data mining: association rule mining and decision rule mining.

Utilizing Educational Data Mining Techniques for Improved Learning: Emerging Research and Opportunities

Doctoral Thesis / Dissertation from the year 2014 in the subject Computer Science - General, , course: DOCTOR OF PHILOSOPHY, language: English, abstract: The primary objective of this research is to develop a process to accurately predict useful data from the huge amount of available data using data mining techniques. Data Mining is the process of finding trends, patterns and correlations between fields in large RDBMS. It permits users to analyse and study data from multiple dimensions and approaches, classify it, and summarize identified data relationships. Our focus in this thesis is to use education data mining procedures to understand higher education system data better which can help in improving efficiency and effectiveness of education. In order to achieve a decisional database, many steps need to be taken which are explained in this thesis. This work investigates the efficiency, scalability, maintenance and interoperability of data mining techniques. In this research work, data-results obtained through different data mining techniques have been compiled and analysed using variety of business intelligence tools to predict useful data. An effort has also been made to identify ways to implement this useful data efficiently in daily decision process in the field of higher education in India. Mining in educational environment is called Educational Data Mining. Han and Kamber describes data mining software that allow the users to analyze data from different dimensions, categorize it and Summarize the relationships which are identified during the mining process. New methods can be used to discover knowledge from educational databases. Every data has a lot of hidden information. The processing method of data decides what type of information data produce. In India education sector has a lot of data that can produce valuable information. This information can be used to increase the quality of education. But educational institution does not use any knowledge discovery process approach on these data. Information and communication technology puts its leg into the education sector to capture and compile low cost information. Now a day a new research community, educational data mining (EDM), is growing which is intersection of data mining and pedagogy. First chapter of the thesis elaborates the knowledge data discovery process, data mining concept, history and application of data mining in various industries.

Theory and Novel Applications of Machine Learning
Read PDF Educational Data Mining Applications And Trends

This book presents high-quality research papers that demonstrate how emerging technologies in the field of intelligent systems can be used to effectively meet global needs. The respective papers highlight a wealth of innovations and experimental results, while also addressing proven IT governance, standards and practices, and new designs and tools that facilitate rapid information flows to the user. The book is divided into five major sections, namely: “Advances in High Performance Computing”, “Advances in Machine and Deep Learning”, “Advances in Networking and Communication”, “Advances in Circuits and Systems in Computing” and “Advances in Control and Soft Computing”.

Advancing the Power of Learning Analytics and Big Data in Education

These proceedings of the 2014 Pacific-Asia Workshop on Computational Intelligence in Industrial Application (CIIA 2014) include 81 peer-reviewed papers. The topics covered in the book include: (1) Computer Intelligence, (2) Application of Computer Science and Communication, (3) Industrial Engineering, Product Design and Manufacturing, (4) Automation

Data Mining

This book is composed of a selection of articles from The 2021 World Conference on Information Systems and Technologies (WorldCIST'21), held online between 30 and 31 of March and 1 and 2 of April 2021 at Hangra de Heroismo, Terceira Island, Azores, Portugal. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges of modern information systems and technologies research, together with their technological development and applications. The main topics covered are: A) Information and Knowledge Management; B) Organizational Models and Information Systems; C) Software and Systems Modeling; D) Software Systems, Architectures, Applications and Tools; E) Multimedia Systems and Applications; F) Computer Networks, Mobility and Pervasive Systems; G) Intelligent and Decision Support Systems; H) Big Data Analytics and Applications; I) Human-computer Interaction; J) Ethics, Computers & Security; K) Health Informatics; L) Information Technologies in Education; M) Information Technologies in Radiocommunications; N) Technologies for Biomedical Applications.

Data Analytics Applications in Education

"This book provides an overview of data mining techniques under an ethical lens, investigating developments in research best practices and examining experimental cases to identify potential ethical dilemmas in the information and communications technology
The 11th International Conference on EUropean Transnational Educational (ICEUTE 2020)

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.

Intelligent Technologies and Applications

Military organizations around the world are normally huge producers and consumers of data. Accordingly, they stand to gain from the many benefits associated with data analytics. However, for leaders in defense organizations—either government or industry—accessible use cases are not always available. This book presents a diverse collection of cases that explore the realm of possibilities in military data analytics. These use cases explore such topics as: Context for maritime situation awareness, Data analytics for electric power and energy applications, Environmental data analytics in military operations, Data analytics and training effectiveness.
A-Z of Digital Research Methods

Advances in technology and media have fundamentally changed the way people perceive research, how research studies are conducted, and the ways data are analyzed/how the findings are presented. Emerging internet-enabled technological tools have enhanced and transformed research in education and the way educators must adapt to conduct future studies. Advancing Educational Research With Emerging Technology provides innovative insights into cutting-edge and long-standing digital tools in educational research and addresses theoretical, methodological, and ethical dimensions in doing research in the digital world. The content within this publication examines such topics as computational linguistics, individualized learning, and mobile technologies. The design of this publication is suited for students, professors, higher education faculty, deans, academicians, researchers, and practitioners looking to expand their research through the use of a broad range of digital tools and resources.

A Beginner’s Guide to Learning Analytics

This book is devoted to the Educational Data Mining arena. It highlights works that show relevant proposals, developments, and achievements that shape trends and inspire future research. After a rigorous revision process sixteen manuscripts were accepted and
organized into four parts as follows: · Profile: The first part embraces three chapters oriented to: 1) describe the nature of educational data mining (EDM); 2) describe how to pre-process raw data to facilitate data mining (DM); 3) explain how EDM supports government policies to enhance education. · Student modeling: The second part contains five chapters concerned with: 4) explore the factors having an impact on the student's academic success; 5) detect student's personality and behaviors in an educational game; 6) predict students performance to adjust content and strategies; 7) identify students who will most benefit from tutor support; 8) hypothesize the student answer correctness based on eye metrics and mouse click. · Assessment: The third part has four chapters related to: 9) analyze the coherence of student research proposals; 10) automatically generate tests based on competences; 11) recognize students activities and visualize these activities for being presented to teachers; 12) find the most dependent test items in students response data. · Trends: The fourth part encompasses four chapters about how to: 13) mine text for assessing students productions and supporting teachers; 14) scan student comments by statistical and text mining techniques; 15) sketch a social network analysis (SNA) to discover student behavior profiles and depict models about their collaboration; 16) evaluate the structure of interactions between the students in social networks. This volume will be a source of interest to researchers, practitioners, professors, and postgraduate students aimed at updating their knowledge and find targets for future work in the field of educational data mining.

International Conference on Applications and Techniques in Cyber Intelligence ATCI 2019

This book provides a conceptual and empirical perspective on learning analytics, its goal being to disseminate the core concepts, research, and outcomes of this emergent field. Divided into nine chapters, it offers reviews oriented on selected topics, recent advances, and innovative applications. It presents the broad learning analytics landscape and in-depth studies on higher education, adaptive assessment, teaching and learning. In addition, it discusses valuable approaches to coping with personalization and huge data, as well as conceptual topics and specialized applications that have shaped the current state of the art. By identifying fundamentals, highlighting applications, and pointing out current trends, the book offers an essential overview of learning analytics to enhance learning achievement in diverse educational settings. As such, it represents a valuable resource for researchers, practitioners, and students interested in updating their knowledge and finding inspirations for their future work.
The term learning analytics is used in the context of the use of analytics in e-learning environments. Learning analytics is used to improve quality. It uses data about students and their activities to provide better understanding and to improve student learning. The use of learning management systems, where the activity of the students can be easily accessed, potentiated the use of learning analytics to understand their route during the learning process, help students be aware of their progress, and detect situations where students can give up the course before its completion, which is a growing problem in e-learning environments. Advancing the Power of Learning Analytics and Big Data in Education provides insights concerning the use of learning analytics, the role and impact of analytics on education, and how learning analytics are designed, employed, and assessed. The chapters will discuss factors affecting learning analytics such as human factors, geographical factors, technological factors, and ethical and legal factors. This book is ideal for teachers, administrators, teacher educators, practitioners, stakeholders, researchers, academicians, and students interested in the use of big data and learning analytics for improved student success and educational environments.

Educational Data Mining

Data mining continues to be an emerging interdisciplinary field that offers the ability to extract information from an existing data set and translate that knowledge for end-users into an understandable way. Data Mining: Concepts, Methodologies, Tools, and Applications is a comprehensive collection of research on the latest advancements and developments of data mining and how it fits into the current technological world.

Data Mining and Learning Analytics

This accessible, alphabetical guide provides concise insights into a variety of digital research methods, incorporating introductory knowledge with practical application and further research implications. A-Z of Digital Research Methods provides a pathway through the often-confusing digital research landscape, while also addressing theoretical, ethical and legal issues that may accompany each methodology. Dawson outlines 60 chapters on a wide range of qualitative and quantitative digital research methods, including textual, numerical, geographical and audio-visual methods. This book includes reflection questions, useful resources and key texts to encourage readers to fully engage with the methods and build a competent understanding of the benefits, disadvantages and appropriate usages of each method. A-Z of Digital Research Methods is the perfect introduction for any student or researcher interested in digital research methods for social and computer sciences.

Advanced Data Mining and Applications
Formative Assessment, Learning Data Analytics and Gamification: An ICT Education discusses the challenges associated with assessing student progress given the explosion of e-learning environments, such as MOOCs and online courses that incorporate activities such as design and modeling. This book shows educators how to effectively garner intelligent data from online educational environments that combine assessment and gamification. This data, when used effectively, can have a positive impact on learning environments and be used for building learner profiles, community building, and as a tactic to create a collaborative team. Using numerous illustrative examples and theoretical and practical results, leading international experts discuss application of automatic techniques for e-assessment of learning activities, methods to collect, analyze, and correctly visualize learning data in educational environments, applications, benefits and challenges of using gamification techniques in academic contexts, and solutions and strategies for increasing student participation and performance.

Indexing: The books of this series are submitted to EI-Compendex and SCOPUS Discusses application of automatic techniques for e-assessment of learning activities Presents strategies to provide immediate and useful feedback on students’ activities Provides methods to collect, analyze, and correctly visualize learning data in educational environments Explains the applications, benefits, and challenges of using gamification techniques in academic contexts Offers solutions to increase students’ participation and performance while lowering drop-out rates and retention levels

Ethical Data Mining Applications for Socio-Economic Development

Even since computers were invented, many researchers have been trying to understand how human beings learn and many interesting paradigms and approaches towards emulating human learning abilities have been proposed. The ability of learning is one of the central features of human intelligence, which makes it an important ingredient in both traditional Artificial Intelligence (AI) and emerging Cognitive Science. Machine Learning (ML) draws upon ideas from a diverse set of disciplines, including AI, Probability and Statistics, Computational Complexity, Information Theory, Psychology and Neurobiology, Control Theory and Philosophy. ML involves broad topics including Fuzzy Logic, Neural Networks (NNs), Evolutionary Algorithms (EAs), Probability and Statistics, Decision Trees, etc. Real-world applications of ML are widespread such as Pattern Recognition, Data Mining, Gaming, Bio-science, Telecommunications, Control and Robotics applications. This books reports the latest developments and futuristic trends in ML.

Responsible Analytics and Data Mining in Education
Handbook of Statistical Analysis and Data Mining Applications

This volume brings together research on how gameplay data in serious games may be turned into valuable analytics or actionable intelligence for performance measurement, assessment, and improvement. Chapter authors use empirical research methodologies, including existing, experimental, and emerging conceptual frameworks, from various fields, such as: computer science software engineering educational data mining statistics information visualization. Serious games is an emerging field where the games are created using sound learning theories and instructional design principles to maximize learning and training success. But how would stakeholders know what play-learners have done in the game environment, and if the actions performance brings about learning? Could they be playing the game for fun, really learning with evidence of performance improvement, or simply gaming the system, i.e., finding loopholes to fake that they are making progress? This volume endeavors to answer these questions.

Learning Analytics: Fundaments, Applications, and Trends

This book is devoted to the Educational Data Mining arena. It highlights works that show relevant proposals, developments, and achievements that shape trends and inspire future research. After a rigorous revision process sixteen manuscripts were accepted and organized into four parts as follows: · Profile: The first part embraces three chapters oriented to: 1) describe the nature of educational data mining (EDM); 2) describe how to pre-process raw data to facilitate data mining (DM); 3) explain how EDM supports government policies to enhance education. · Student modeling: The second part contains five chapters concerned with: 4) explore the factors having an impact on the student's academic success; 5) detect student's personality and behaviors in an educational game; 6) predict students performance to adjust content and strategies; 7) identify students who will most benefit from tutor support; 8) hypothesize the student answer correctness based on eye metrics and mouse click. · Assessment: The third part has four chapters related to: 9) analyze the coherence of student research proposals; 10) automatically generate tests based on competences; 11) recognize students activities and visualize these activities for being presented to teachers; 12) find the most dependent test items in students response data. · Trends: The fourth part encompasses four chapters about how to: 13) mine text for assessing students productions and supporting teachers; 14) scan student comments by statistical and text mining techniques; 15) sketch a social network analysis (SNA) to discover student behavior profiles and depict models about their collaboration; 16) evaluate the structure of interactions between the students in social networks. This volume
will be a source of interest to researchers, practitioners, professors, and postgraduate students aimed at updating their knowledge and find targets for future work in the field of educational data mining.

Computational Intelligence in Industrial Application

This book constitutes the refereed proceedings of the Second International Conference on Intelligent Technologies and Applications, INTAP 2019, held in Bahawalpur, Pakistan, in November 2019. The 60 revised full papers and 6 revised short papers presented were carefully reviewed and selected from 224 submissions. Additionally, the volume presents 1 invited paper. The papers of this volume are organized in topical sections on AI and health; sentiment analysis; intelligent applications; social media analytics; business intelligence; Natural Language Processing; information extraction; machine learning; smart systems; semantic web; decision support systems; image analysis; automated software engineering.

Data Mining Applications. A Comparative Study for Predicting Student's Performance

The 5th Symposium on Data Mining Applications (SDMA 2018) provides valuable opportunities for technical collaboration among data mining and machine learning researchers in Saudi Arabia, Gulf Cooperation Council (GCC) countries and the Middle East region. This book gathers the proceedings of the SDMA 2018. All papers were peer-reviewed based on a strict policy concerning the originality, significance to the area, scientific vigor and quality of the contribution, and address the following research areas.
• Applications: Applications of data mining in domains including databases, social networks, web, bioinformatics, finance, healthcare, and security.
• Algorithms: Data mining and machine learning foundations, algorithms, models, and theory.
• Text Mining: Semantic analysis and mining text in Arabic, semi-structured, streaming, multimedia data.
• Framework: Data mining frameworks, platforms and systems implementation.
• Visualizations: Data visualization and modeling.

Recent Advances in Information Systems and Technologies

This book constitutes the refereed proceedings of the Second International Conference on Data Mining and Big Data, DMBD 2017, held in Fukuoka, Japan, in July/August 2017. The 53 papers presented in this volume were carefully reviewed and selected from 96 submissions. They were organized in topical sections named: association analysis; clustering; prediction; classification;
schedule and sequence analysis; big data; data analysis; data mining; text mining; deep learning; high performance computing; knowledge base and its framework; and fuzzy control.

Military Applications of Data Analytics

Educational Data Mining

This book presents innovative ideas, cutting-edge findings, and novel techniques, methods, and applications in a broad range of cybersecurity and cyberthreat intelligence areas. As our society becomes smarter, there is a corresponding need to be able to secure our cyberfuture. The approaches and findings described in this book are of interest to businesses and governments seeking to secure our data and underpin infrastructures, as well as to individual users.

Data Mining and Learning Analytics

Advances in Data Mining. Applications and Theoretical Aspects

Educational Data Mining (EDM) is one of the emerging fields in the pedagogy and andragogy paradigm, it concerns the techniques which research data coming from the educational domain. An archetype that is covered is that of learning by example. This is a guide for EDM implementation using R and Rattle open source data mining tools.

Formative Assessment, Learning Data Analytics and Gamification

Handbook of Statistical Analysis and Data Mining Applications, Second Edition, is a comprehensive professional reference book that guides business analysts, scientists, engineers and researchers, both academic and industrial, through all stages of data analysis, model building and implementation. The handbook helps users discern technical and business problems, understand the strengths and weaknesses of modern data mining algorithms and employ the right statistical methods for practical application. This book is an ideal reference for users who want to address massive and complex datasets with novel statistical approaches and be able to objectively evaluate analyses and solutions. It has clear, intuitive explanations of the principles and tools for solving problems using modern analytic techniques and discusses their application to real problems in ways accessible and beneficial to practitioners across several areas—from science and engineering, to medicine, academia and commerce. Includes input by practitioners for practitioners Includes tutorials in numerous fields of study that provide step-by-
step instruction on how to use supplied tools to build models
Contains practical advice from successful real-world implementations
Brings together, in a single resource, all the information a
beginner needs to understand the tools and issues in data mining to
build successful data mining solutions Features clear, intuitive
explanations of novel analytical tools and techniques, and their
practical applications

Data Mining and Learning Analytics

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
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contributions from international experts in a variety of fields.
Includes case studies where data mining techniques have been
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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.

Data Mining: Concepts, Methodologies, Tools, and
Applications

Winner of two Outstanding Book Awards from the Association of
Educational Communications and Technology (Culture, Learning, &
Technology and Systems Thinking & Change divisions)! Rapid
advancements in our ability to collect, process, and analyze massive
amounts of data along with the widespread use of online and blended learning platforms have enabled educators at all levels to gain new insights into how people learn. Responsible Analytics and Data Mining in Education addresses the thoughtful and purposeful navigation, evaluation, and implementation of these emerging forms of educational data analysis. Chapter authors from around the world explore how data analytics can be used to improve course and program quality; how the data and its interpretations may inadvertently impact students, faculty, and institutions; the quality and reliability of data, as well as the accuracy of data-based decisions; ethical implications surrounding the collection, distribution, and use of student-generated data; and more. This volume unpacks and explores this complex issue through a systematic framework whose dimensions address the issues that must be considered before implementation of a new initiative or program.

Digital Technologies and Applications


Handbook of Educational Data Mining

This book A Beginner’s Guide to Learning Analytics is designed to meet modern educational trends’ needs. It is addressed to readers who have no prior knowledge of learning analytics and functions as an introductory text to learning analytics for those who want to do more with evaluation/assessment in their organizations. The book is useful to all who need to evaluate their learning and teaching strategies. It aims to bring greater efficiency and deeper engagement to individual students, learning communities, and educators. Covered here are the key concepts linked to learning analytics for researchers and practitioners interested in learning analytics. This book helps those who want to apply analytics to learning and development programs and helps educational institutions to identify learners who require support and provide a more personalized learning experience. Like chapters show diverse uses of learning analytics to enhance student and faculty performance. It presents a coherent framework for the effective translation of learning analytics research for educational practice to its practical application in different educational domains. This book provides educators and researchers with the tools and frameworks to effectively make sense of and use data and analytics in their everyday practice. This book will be a valuable addition to researchers’ bookshelves.
Modern education has increased its reach through ICT tools and techniques. To manage educational data with the help of modern artificial intelligence, data and web mining techniques on dedicated cloud or grid platforms for educational institutes can be used. By utilizing data science techniques to manage educational data, the safekeeping, delivery, and use of knowledge can be increased for better quality education. Utilizing Educational Data Mining Techniques for Improved Learning: Emerging Research and Opportunities is a critical scholarly resource that explores data mining and management techniques that promote the improvement and optimization of educational data systems. The book intends to provide new models, platforms, tools, and protocols in data science for educational data analysis and introduces innovative hybrid system models dedicated to data science. Including topics such as automatic assessment, educational analytics, and machine learning, this book is essential for IT specialists, data analysts, computer engineers, education professionals, administrators, policymakers, researchers, academicians, and technology experts.

Emerging Trends in Computing and Expert Technology

This book presents a selection of papers from the 2017 World Conference on Information Systems and Technologies (WorldCIST'17), held between the 11st and 13th of April 2017 at Porto Santo Island, Madeira, Portugal. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges involved in modern Information Systems and Technologies research, together with technological developments and applications. The main topics covered are: Information and Knowledge Management; Organizational Models and Information Systems; Software and Systems Modeling; Software Systems, Architectures, Applications and Tools; Multimedia Systems and Applications; Computer Networks, Mobility and Pervasive Systems; Intelligent and Decision Support Systems; Big Data Analytics and Applications; Human–Computer Interaction; Ethics, Computers & Security; Health Informatics; Information Technologies in Education; and Information Technologies in Radiocommunications.

5th International Symposium on Data Mining Applications

This book emphasizes that learning efficiency of the learners can be increased by providing personalized course materials and guiding them to attune with suitable learning paths based on their characteristics such as learning style, knowledge level, emotion, motivation, self-efficacy and many more learning ability factors in e-learning system. Learning is a continuous process since human evolution. In fact, it is related to life and innovations. The basic
objective of learning to grow, aspire and develop ease of life remains the same despite changes in the learning methodologies. Introduction of computers empowered us to attain new zenith in knowledge domain, developed pragmatic approach to solve life’s problem and helped us to decipher different hidden patterns of data to get new ideas. Of late, computers are predominantly used in education. Its process has been changed from offline to online in view of enhancing the ease of learning. With the advent of information technology, e-learning has taken centre stage in educational domain. In e-learning context, developing adaptive e-learning system is buzzword among contemporary research scholars in the area of Educational Data Mining (EDM). Enabling personalized systems is meant for improvement in learning experience for learners as per their choices made or auto-detected needs. It helps in enhancing their performance in terms of knowledge, skills, aptitudes and preferences. It also enables speeding up the learning process qualitatively and quantitatively. These objectives are met only by the Personalized Adaptive E-learning Systems in this regard. Many noble frameworks were conceptualized, designed and developed to infer learning style preferences, and accordingly, learning materials were delivered adaptively to the learners. Designing frameworks help to measure learners’ preferences minutely and provide adaptive learning materials to them in a way most appropriately.

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