

## **Advances In Data Mining Applications And Theoretical Aspects 10th Industrial Conference Icdm 2010 Berlin Germany July 12 14 2010 Proceedings Lecture Notes In Computer Science**

This book constitutes the refereed proceedings of the 6th Industrial Conference on Data Mining, ICDM 2006, held in Leipzig, Germany in July 2006. Presents 45 carefully reviewed and revised full papers organized in topical sections on data mining in medicine, Web mining and logfile analysis, theoretical aspects of data mining, data mining in marketing, mining signals and images, and aspects of data mining, and applications such as intrusion detection, and more.

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. With the growing use of information technology and the recent advances in web systems, the amount of data available to users has increased exponentially. Thus, there is a critical need to understand the content of the data. As a result, data-mining has become a popular research topic in recent years for the treatment of the "data rich and information poor" syndrome. In this carefully edited volume a theoretical foundation as well as important new directions for data-mining research are presented. It brings together a set of well respected data mining theoreticians and researchers with practical data mining experiences. The presented theories will give data mining practitioners a scientific perspective in data mining and thus provide more insight into their problems, and the provided new data mining topics can be expected to stimulate further research in these important directions.

This book presents papers describing selected projects on the topic of data mining in fields like e commerce, medicine, and knowledge management. The objective is to report on current results and at the same time to give a review on the present activities in this field in Germany. An effort has been made to include the latest scientific results, as well as lead the reader to the various fields of activity and the problems related to them. Knowledge discovery on the basis of web data is a wide and fast growing area. E commerce is the principal theme of motivation in this field, as companies invest large sums in the electronic market, in order to maximize their profits and minimize their risks. Other applications are telelearning, teleteaching, service support, and citizen information systems. Concerning these applications, there is a

great need to understand and support the user by means of recommendation systems, adaptive information systems, as well as by personalization. In this respect Giudici and Blanc present in their paper procedures for the generation of associative models from the tracking behavior of the user. Perner and Fiss present in their paper a strategy for intelligent e marketing with web mining and personalization. Methods and procedures for the generation of associative rules are presented in the paper by Hipp, Güntzer, and Nakhaeidizadeh.

This book constitutes the refereed proceedings of the 11th Industrial Conference on Data Mining, ICDM 2011, held in New York, USA in September 2011. The 22 revised full papers presented were carefully reviewed and selected from 100 submissions. The papers are organized in topical sections on data mining in medicine and agriculture, data mining in marketing, data mining for Industrial processes and in telecommunication, Multimedia Data Mining, theoretical aspects of data mining, Data Warehousing, WebMining and Information Mining.

This book constitutes the refereed proceedings of the 13th Industrial Conference on Data Mining, ICDM 2013, held in New York, NY, in July 2013. The 22 revised full papers presented were carefully reviewed and selected from 112 submissions. The topics range from theoretical aspects of data mining to applications of data mining, such as in multimedia data, in marketing, finance and telecommunication, in medicine and agriculture, and in process control, industry and society.

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.

The main goal of the new field of data mining is the analysis of large and complex datasets. Some very important datasets may be derived from business and industrial activities. This kind of data is known as "enterprise data". The common characteristic of such datasets is that the analyst wishes to analyze them for the purpose of designing a more cost-effective strategy for optimizing some type of performance measure, such as reducing production time, improving quality, eliminating wastes, or maximizing profit. Data in this category may describe different scheduling scenarios in a manufacturing environment, quality control of some process, fault diagnosis in the operation of a machine or process, risk analysis when issuing credit to applicants, management of supply chains in a manufacturing system, or data for business

related decision-making.

These are the proceedings of the tenth event of the Industrial Conference on Data Mining ICDM held in Berlin ([www.data-mining-forum.de](http://www.data-mining-forum.de)). For this edition the Program Committee received 175 submissions. After the peer-review process, we accepted 49 high-quality papers for oral presentation that are included in this book. The topics range from theoretical aspects of data mining to applications of data mining such as on multimedia data, in marketing, finance and telecommunication, in medicine and agriculture, and in process control, industry and society. Extended versions of selected papers will appear in the international journal *Transactions on Machine Learning and Data Mining* ([www.ibai-publishing.org/journal/mldm](http://www.ibai-publishing.org/journal/mldm)). Ten papers were selected for poster presentations and are published in the ICDM Poster Proceeding Volume by ibai-publishing ([www.ibai-publishing.org](http://www.ibai-publishing.org)). In conjunction with ICDM four workshops were held on special hot application-oriented topics in data mining: Data Mining in Marketing DMM, Data Mining in LifeScience DMLS, the Workshop on Case-Based Reasoning for Multimedia Data CBR-MD, and the Workshop on Data Mining in Agriculture DMA. The Workshop on Data Mining in Agriculture ran for the first time this year. All workshop papers will be published in the workshop proceedings by ibai-publishing ([www.ibai-publishing.org](http://www.ibai-publishing.org)). Selected papers of CBR-MD will be published in a special issue of the international journal *Transactions on Case-Based Reasoning* ([www.ibai-publishing.org/journal/cbr](http://www.ibai-publishing.org/journal/cbr)).

*Advances in Data Mining Knowledge Discovery and Applications* aims to help data miners, researchers, scholars, and PhD students who wish to apply data mining techniques. The primary contribution of this book is highlighting frontier fields and implementations of the knowledge discovery and data mining. It seems to be some things are repeated again. But in general, same approach and techniques may help us in different fields and expertise areas. This book presents knowledge discovery and data mining applications in two different sections. As known that, data mining covers areas of statistics, machine learning, data management and databases, pattern recognition, artificial intelligence, and other areas. In this book, most of the areas are covered with different data mining applications. The eighteen chapters have been classified in two parts: Knowledge Discovery and Data Mining Applications.

This book constitutes the refereed proceedings of the 17th Industrial Conference on Advances in Data Mining, ICDM 2017, held in New York, NY, USA, in July 2017. The 27 revised full papers presented were carefully reviewed and selected from 71 submissions. The topics range from theoretical aspects of data mining to applications of data mining, such as in multimedia data, in marketing, in medicine, and in process control in industry and society.

The Industrial Conference on Data Mining ICDM-Leipzig was the fourth meeting in a series of annual events which started in 2000, organized by the Institute of Computer Vision and Applied Computer Sciences (IBaI) in Leipzig. The mission of the conference is to bring together researchers and people from industry in order to discuss together new trends and applications in data mining. This year a broad spectrum of work of different applications was presented ranging from image mining, medicine and biotechnology, management and environmental control, to telecommunications. Besides that an industrial exhibition showed the successful application of data mining methods by industries in different areas such as medical devices, mass data management systems, data mining tools, etc. During the discussion many projects were inspired leading to new and joint work. The fruitful discussions, the exchange of ideas and the spirit of the conference made it a remarkable event for both sides, industry and research. We would like to express our appreciation to the reviewers for their precise and highly professional work. We appreciate the help and understanding of the editorial staff at Springer and in particular Alfred Hofmann, who supported the publication of these proceedings in the LNAI series. Last, but not least, we wish to thank all speakers, participants and

industrial exhibitors who contributed to the success of the conference. We are looking forward to welcoming you to ICDM 2005 ([www.data-mini-forum.de](http://www.data-mini-forum.de)) and to the new work you will present there.

"This book is an updated look at the state of technology in the field of data mining and analytics offering the latest technological, analytical, ethical, and commercial perspectives on topics in data mining"--Provided by publisher.

The papers in this volume represent the proceedings of the 7th Industrial Conference on Data Mining. They are organized into topical sections on aspects of classification and prediction, clustering, web mining, data mining in medicine, applications of data mining, time series and frequent pattern mining, and association rule mining. Readers gain new insights into theories underlying data mining and discover state-of-the-technology applications.

This book constitutes the refereed proceedings of the 14th Industrial Conference on Advances in Data Mining, ICDM 2014, held in St. Petersburg, Russia, in July 2014. The 16 revised full papers presented were carefully reviewed and selected from various submissions. The topics range from theoretical aspects of data mining to applications of data mining, such as in multimedia data, in marketing, in medicine and agriculture and in process control, industry and society.

Advances in Machine Learning and Data Mining for Astronomy documents numerous successful collaborations among computer scientists, statisticians, and astronomers who illustrate the application of state-of-the-art machine learning and data mining techniques in astronomy.

Due to the massive amount and complexity of data in most scientific disciplines

The field of data mining is receiving significant attention in today's information-rich society, where data is available from different sources and formats, in large volumes, and no longer constitutes a bottleneck for knowledge acquisition. This rich information has paved the way for novel areas of research, particularly in the crime data analysis realm. Data Mining Trends and Applications in Criminal Science and Investigations presents scientific concepts and frameworks of data mining and analytics implementation and uses across various domains, such as public safety, criminal investigations, intrusion detection, crime scene analysis, and suspect modeling. Exploring the diverse ways that data is revolutionizing the field of criminal science, this publication meets the research needs of law enforcement professionals, data analysts, investigators, researchers, and graduate-level students.

This volume comprises the proceedings of the Industrial Conference on Data Mining (ICDM 2009) held in Leipzig ([www.data-mining-forum.de](http://www.data-mining-forum.de)). For this edition the Program Committee received 130 submissions. After the peer-review process, we accepted 32 high-quality papers for oral presentation that are included in this book. The topics range from theoretical aspects of data mining to applications of data mining, such as on multimedia data, in marketing, finance and telecommunication, in medicine and agriculture, and in process control, industry and society. Ten papers were selected for poster presentations that are published in the ICDM Poster Proceedings Volume by ibai-publishing ([www.ibai-publishing.org](http://www.ibai-publishing.org)). In conjunction with ICDM two workshops were run focusing on special hot application-oriented topics in data mining. The workshop Data Mining in Marketing DMM 2009 was run for the second time. The papers are published in a separate workshop book "Advances in Data Mining on Marketing" by ibai-publishing ([www.ibai-publishing.org](http://www.ibai-publishing.org)). The Workshop on Case-Based Reasoning for Multimedia Data CBR-MD ran for the second year. The papers are published in a special issue of the International Journal of Transactions on Case-Based Reasoning ([www.ibai-publishing.org/journal/cbr](http://www.ibai-publishing.org/journal/cbr)).

This volume constitutes the proceedings of the 18th Industrial Conference on Advances in Data Mining, ICDM 2018, held in New York, NY, USA, in July 2018. The 24 regular papers presented in this book were carefully reviewed and selected from 146 submissions. The topics

range from theoretical aspects of data mining to applications of data mining, such as in multimedia data, in marketing, in medicine and agriculture, and in process control, industry, and society.

Data mining is becoming a pervasive technology in activities as diverse as using historical data to predict the success of a marketing campaign, looking for patterns in financial transactions to discover illegal activities or analyzing genome sequences. From this perspective, it was just a matter of time for the discipline to reach the important area of computer security. Applications Of Data Mining In Computer Security presents a collection of research efforts on the use of data mining in computer security. Applications Of Data Mining In Computer Security concentrates heavily on the use of data mining in the area of intrusion detection. The reason for this is twofold. First, the volume of data dealing with both network and host activity is so large that it makes it an ideal candidate for using data mining techniques. Second, intrusion detection is an extremely critical activity. This book also addresses the application of data mining to computer forensics. This is a crucial area that seeks to address the needs of law enforcement in analyzing the digital evidence.

ICDM / MLDM Medaille (limited edition) Meissner Porcellan, the "White Gold" of King August the Strongest of Saxonia ICDM 2008 was the eighth event of the Industrial Conference on Data Mining held in Leipzig ([www.data-mining-forum.de](http://www.data-mining-forum.de)). For this edition the Program Committee received 116 submissions from 20 countries. After the peer-review process, we accepted 36 high-quality papers for oral presentation, which are included in these proceedings. The topics range from aspects of classification and prediction, clustering, Web mining, data mining in medicine, applications of data mining, time series and frequent pattern mining, and association rule mining. Thirteen papers were selected for poster presentations that are published in the ICDM Poster Proceeding Volume. In conjunction with ICDM there were three workshops focusing on special hot application-oriented topics in data mining. The workshop Data Mining in Life Science DMLS 2008 was held the third time this year and the workshop Data Mining in Marketing DMM 2008 ran for the second time this year. Additionally, we introduced an International Workshop on Case-Based Reasoning for Multimedia Data CBR-MD.

Data Mining Applications in Engineering and Medicine targets to help data miners who wish to apply different data mining techniques. Data mining generally covers areas of statistics, machine learning, data management and databases, pattern recognition, artificial intelligence, etc. In this book, most of the areas are covered by describing different applications. This is why you will find here why and how Data Mining can also be applied to the improvement of project management. Since Data Mining has been widely used in a medical field, this book contains different chapters referring to some aspects and importance of its use in the mentioned field: Incorporating Domain Knowledge into Medical Image Mining, Data Mining Techniques in Pharmacovigilance, Electronic Documentation of Clinical Pharmacy Interventions in Hospitals etc. We hope that this book will inspire readers to pursue education and research in this emerging field.

Eight sections of this book span fundamental issues of knowledge discovery, classification and clustering, trend and deviation analysis, dependency derivation, integrated discovery systems, augmented database systems and application case studies. The appendices provide a list of terms used in the literature of the field of data mining and knowledge discovery in databases, and a list of online resources for the KDD researcher.

Presents an overview of the main issues of data mining, including its classification, regression, clustering, and ethical issues. Provides readers with knowledge enhancing processes as well as a wide spectrum of data mining applications. This book constitutes the refereed proceedings of the 15th Industrial Conference on Advances in Data Mining, ICDM 2015, held in Hamburg, Germany, in July 2015. The 16 revised full papers presented were carefully reviewed and selected from numerous submissions. The topics range from theoretical aspects of data mining to applications of data mining, such as in multimedia data, in marketing, in medicine and agriculture, and in process control, industry and society.

This unified volume is a collection of invited chapters presenting recent developments in the field of data analysis, with applications to reliability and inference, data mining, bioinformatics, lifetime data, and neural networks. The book is a useful reference for graduate students, researchers, and practitioners in statistics, mathematics, engineering, economics, social science, bioengineering, and bioscience.

This book constitutes the refereed proceedings of the 16th Industrial Conference on Advances in Data Mining, ICDM 2016, held in New York, NY, USA, in July 2016. The 33 revised full papers presented were carefully reviewed and selected from 100 submissions. The topics range from theoretical aspects of data mining to applications of data mining, such as in multimedia data, in marketing, in medicine, and in process control, industry, and society.

Data mining applications range from commercial to social domains, with novel applications appearing swiftly; for example, within the context of social networks. The expanding application sphere and social reach of advanced data mining raise pertinent issues of privacy and security. Present-day data mining is a progressive multidisciplinary endeavor. This inter- and multidisciplinary approach is well reflected within the field of information systems. The information systems research addresses software and hardware requirements for supporting computationally and data-intensive applications. Furthermore, it encompasses analyzing system and data aspects, and all manual or automated activities. In that respect, research at the interface of information systems and data mining has significant potential to produce actionable knowledge vital for corporate decision-making. The aim of the proposed volume is to provide a balanced treatment of the latest advances and developments in data mining; in particular, exploring synergies at the intersection with information systems. It will serve as a platform for academics and practitioners to highlight their recent achievements and reveal potential opportunities in the field. Thanks to its multidisciplinary nature, the volume is expected to become a vital resource for a broad readership ranging from students, throughout engineers and developers, to researchers and academics.

The real power for security applications will come from the synergy of academic and commercial research focusing on the specific

issue of security. Special constraints apply to this domain, which are not always taken into consideration by academic research, but are critical for successful security applications: large volumes: techniques must be able to handle huge amounts of data and perform 'on-line' computation; scalability: algorithms must have processing times that scale well with ever growing volumes; automation: the analysis process must be automated so that information extraction can 'run on its own'; ease of use: everyday citizens should be able to extract and assess the necessary information; and robustness: systems must be able to cope with data of poor quality (missing or erroneous data). The NATO Advanced Study Institute (ASI) on Mining Massive Data Sets for Security, held in Italy, September 2007, brought together around ninety participants to discuss these issues. This publication includes the most important contributions, but can of course not entirely reflect the lively interactions which allowed the participants to exchange their views and share their experience. The bridge between academic methods and industrial constraints is systematically discussed throughout. This volume will thus serve as a reference book for anyone interested in understanding the techniques for handling very large data sets and how to apply them in conjunction for solving security issues.

Advances in Data Mining: Applications and Theoretical Aspects 14th Industrial Conference, ICDM 2014, St. Petersburg, Russia, July 16-20, 2014, Proceedings Springer

"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 sector"--Provided by publisher.

The main goal of the new field of data mining is the analysis of large and complex datasets. Some very important datasets may be derived from business and industrial activities. This kind of data is known as OC enterprise data OCO. The common characteristic of such datasets is that the analyst wishes to analyze them for the purpose of designing a more cost-effective strategy for optimizing some type of performance measure, such as reducing production time, improving quality, eliminating wastes, or maximizing profit. Data in this category may describe different scheduling scenarios in a manufacturing environment, quality control of some process, fault diagnosis in the operation of a machine or process, risk analysis when issuing credit to applicants, management of supply chains in a manufacturing system, or data for business related decision-making. Sample Chapter(s). Foreword (37 KB). Chapter 1: Enterprise Data Mining: A Review and Research Directions (655 KB). Contents: Enterprise Data Mining: A Review and Research Directions (T W Liao); Application and Comparison of Classification Techniques in Controlling Credit Risk (L Yu et al.); Predictive Classification with Imbalanced Enterprise Data (S Daskalaki et al.); Data Mining Applications of Process Platform Formation for High Variety Production (J Jiao & L Zhang); Multivariate Control Charts from a Data Mining Perspective (G C Porzio & G Ragozini); Maintenance Planning Using Enterprise Data Mining (L P Khoo et al.); Mining Images of Cell-Based Assays (P Perner); Support Vector Machines and Applications (T B Trafalis & O O Oladunni); A Survey of Manifold-Based Learning Methods (X Huo et al.); and other papers. Readership: Graduate students in engineering, computer science, and business schools; researchers and practioners of data mining with emphazis of enterprise data mining."

