

Feature Extraction Foundations And Applications 1st Edition

This book offers a coherent and comprehensive approach to feature subset selection in the scope of classification problems, explaining the foundations, real application problems and the challenges of feature selection for high-dimensional data. The authors first focus on the analysis and synthesis of feature selection algorithms, presenting a comprehensive review of basic concepts and experimental results of the most well-known algorithms. They then address different real scenarios with high-dimensional data, showing the use of feature selection algorithms in different contexts with different requirements and information: microarray data, intrusion detection, tear film lipid layer classification and cost-based features. The book then delves into the scenario of big dimension, paying attention to important problems under high-dimensional spaces, such as scalability, distributed processing and real-time processing, scenarios that open up new and interesting challenges for

researchers. The book is useful for practitioners, researchers and graduate students in the areas of machine learning and data mining.

The two-volume set IFIP AICT 566 and 567 constitutes the refereed proceedings of the International IFIP WG 5.7 Conference on Advances in Production Management Systems, APMS 2019, held in Austin, TX, USA. The 161 revised full papers presented were carefully reviewed and selected from 184 submissions. They discuss globally pressing issues in smart manufacturing, operations management, supply chain management, and Industry 4.0. The papers are organized in the following topical sections: lean production; production management in food supply chains; sustainability and reconfigurability of manufacturing systems; product and asset life cycle management in smart factories of industry 4.0; variety and complexity management in the era of industry 4.0; participatory methods for supporting the career choices in industrial engineering and management education; blockchain in supply chain management; designing and delivering smart services in the digital age; operations management in engineer-to-order manufacturing; the operator 4.0 and the

Internet of Things, services and people; intelligent diagnostics and maintenance solutions for smart manufacturing; smart supply networks; production management theory and methodology; data-driven production management; industry 4.0 implementations; smart factory and IIOT; cyber-physical systems; knowledge management in design and manufacturing; collaborative product development; ICT for collaborative manufacturing; collaborative technology; applications of machine learning in production management; and collaborative technology.

This book adopts a detailed and methodological algorithmic approach to explain the concepts of pattern recognition. While the text provides a systematic account of its major topics such as pattern representation and nearest neighbour based classifiers, current topics — neural networks, support vector machines and decision trees — attributed to the recent vast progress in this field are also dealt with. Introduction to Pattern Recognition and Machine Learning will equip readers, especially senior computer science undergraduates, with a deeper understanding of the subject matter. Contents: Introduction Types of Data Feature Extraction and Feature Selection Bayesian

Learning Classification Using Soft Computing Techniques
Data Clustering Soft Clustering Application — Social and Information Networks
Readership: Academics and working professionals in computer science.
Key Features: The algorithmic approach taken and the practical issues dealt with will aid the reader in writing programs and implementing methods
Covers recent and advanced topics by providing working exercises, examples and illustrations in each chapter
Provides the reader with a deeper understanding of the subject matter
Keywords: Clustering; Classification; Supervised Learning; Soft Computing

This edited book includes extended and revised versions of a set of selected papers from the First International Conference on Pattern Recognition (ICPRAM 2012), held in Vilamoura, Algarve, Portugal, from 6 to 8 February, 2012, sponsored by the Institute for Systems and Technologies of Information Control and Communication (INSTICC) and held in cooperation with the Association for the Advancement of Artificial Intelligence (AAAI) and Pattern Analysis, Statistical Modelling and Computational Learning (PASCAL2). The conference brought

together researchers, engineers and practitioners interested on the areas of Pattern Recognition, both from theoretical and application perspectives.

Application of Bioinformatics in Cancers

Artificial Neural Networks - ICANN 2006

Subspace, Latent Structure and Feature Selection

Case Studies and New Developments

Practical Machine Learning for Data Analysis Using Python

Concepts, Methodologies, Tools, and Applications

Music Data Analysis

This book proposes applications of tensor decomposition to unsupervised feature extraction and feature selection. The author posits that although supervised methods including deep learning have become popular, unsupervised methods have their own advantages. He argues that this is the case because unsupervised methods are easy to learn since tensor decomposition is a conventional linear methodology. This book starts from very basic linear algebra and reaches the cutting edge methodologies applied to difficult situations when there are many features (variables) while only small number of samples are available. The author includes advanced descriptions about tensor decomposition including Tucker decomposition using high order singular value decomposition as well as higher order orthogonal iteration, and train tenor decomposition. The author concludes by showing unsupervised methods and their application to a wide range of topics. Allows readers to analyze data sets with small samples

and many features; Provides a fast algorithm, based upon linear algebra, to analyze big data; Includes several applications to multi-view data analyses, with a focus on bioinformatics.

This book constitutes the refereed proceedings of the 7th International Conference on Intelligent Data Engineering and Automated Learning, IDEAL 2006. The 170 revised full papers presented were carefully selected from 557 submissions. The papers are organized in topical sections on learning and information processing, data mining, retrieval and management, bioinformatics and bio-inspired models, agents and hybrid systems, financial engineering, as well as a special session on nature-inspired data technologies.

Computational Intelligence (CI) community has developed hundreds of algorithms for intelligent data analysis, but still many hard problems in computer vision, signal processing or text and multimedia understanding, problems that require deep learning techniques, are open. Modern data mining packages contain numerous modules for data acquisition, pre-processing, feature selection and construction, instance selection, classification, association and approximation methods, optimization techniques, pattern discovery, clusterization, visualization and post-processing. A large data mining package allows for billions of ways in which these modules can be combined. No human expert can claim to explore and understand all possibilities in the knowledge discovery process. This is where algorithms that learn how to learn come to rescue. Operating in the space of all available data transformations and optimization techniques these algorithms use meta-knowledge about learning processes automatically extracted from experience of solving diverse problems. Inferences about transformations useful in different contexts help to construct learning algorithms that can uncover various aspects of knowledge hidden in the data. Meta-learning shifts the focus of the whole CI field

from individual learning algorithms to the higher level of learning how to learn. This book defines and reveals new theoretical and practical trends in meta-learning, inspiring the readers to further research in this exciting field.

This book constitutes the refereed proceedings of the 8th IAPR International Conference on Pattern Recognition in Bioinformatics, PRIB 2013, held in Nice, France, in June 2013. The 25 revised full papers presented were carefully reviewed and selected from 43 submissions. The papers are organized in topical sections on bio-molecular networks and pathway analysis; learning, classification, and clustering; data mining and knowledge discovery; protein: structure, function, and interaction; motifs, sites, and sequence analysis.

Machine Learning: Theoretical Foundations and Practical Applications

Data Mining: Foundations and Practice

Neural Networks and Extensions

Foundations and Applications

Feature Selection for High-Dimensional Data

9th International Conference Zakopane, Poland, June 22-26, 2008, Proceedings

5th ECML PKDD Workshop, MIDAS 2020, Ghent, Belgium, September 18, 2020, Revised Selected Papers

Intrusions constitute one of the main issues in computer network security. Through malicious actions, hackers can have unauthorised access that compromises the integrity, the confidentiality, and the availability of resources or services. Intrusion detection systems (IDSs) have been developed to monitor and filter network activities by identifying attacks

and alerting network administrators.

This volume contains some carefully selected papers presented at the 8th International Conference on Knowledge, Information and Creativity Support Systems KICCS'2013, which was held in Kraków and Wieliczka, Poland in November 2013. In most cases the papers are extended versions with newer results added, representing virtually all topics covered by the conference. The KICCS'2013 focus theme, "Looking into the Future of Creativity and Decision Support Systems", clearly indicates that the growing complexity calls for some deeper and insightful discussions about the future but, obviously, complemented with an exposition of modern present developments that have proven their power and usefulness. Following this theme, the list of topics presented in this volume include some future-oriented fields of research, such as anticipatory networks and systems, foresight support systems, relevant newly-emerging applications, exemplified by autonomous creative systems. Special attention was also given to cognitive and collaborative aspects of creativity.

This two volume set (LNCS 6791 and LNCS 6792) constitutes the refereed proceedings of the 21th International Conference on Artificial Neural Networks, ICANN 2011, held in Espoo, Finland, in June 2011. The 106 revised full or poster papers presented were carefully reviewed and selected from numerous submissions. ICANN 2011 had two basic tracks: brain-inspired computing and machine learning research, with strong cross-

disciplinary interactions and applications.

There is broad interest in feature extraction, construction, and selection among practitioners from statistics, pattern recognition, and data mining to machine learning. Data preprocessing is an essential step in the knowledge discovery process for real-world applications. This book compiles contributions from many leading and active researchers in this growing field and paints a picture of the state-of-art techniques that can boost the capabilities of many existing data mining tools. The objective of this collection is to increase the awareness of the data mining community about the research of feature extraction, construction and selection, which are currently conducted mainly in isolation. This book is part of our endeavor to produce a contemporary overview of modern solutions, to create synergy among these seemingly different branches, and to pave the way for developing meta-systems and novel approaches. Even with today's advanced computer technologies, discovering knowledge from data can still be fiendishly hard due to the characteristics of the computer generated data. Feature extraction, construction and selection are a set of techniques that transform and simplify data so as to make data mining tasks easier. Feature construction and selection can be viewed as two sides of the representation problem.

Deterministic and Statistical Methods in Machine Learning

IFIP WG 5.7 International Conference, APMS 2019, Austin, TX, USA, September 1–5,

2019, Proceedings, Part I

Unsupervised Feature Extraction Applied to Bioinformatics

Pattern Recognition - Applications and Methods

Meta-Learning in Computational Intelligence

Intelligent Data Engineering and Automated Learning - IDEAL 2006

Knowledge, Information and Creativity Support Systems: Recent Trends, Advances and Solutions

The book discusses advantages of the firefly algorithm over other well-known metaheuristic in various engineering studies. The book provides a brief outline of various application-oriented problem solving methods, like economic emission load dispatch problem, designing a fully digital controlled reconfigurable switched beam nonconcentric ring array antenna, image segmentation minimization in permutation flow shop scheduling, multi-objective load dispatch problems, image compression, etc., using FA and its variants. It also covers the use of the firefly algorithm to extract features, as research has shown that the firefly algorithm generates precise and optimal results of time and optimality. In addition, the book also explores the potential of the firefly algorithm to provide a solution to traveling salesman problem, graph coloring problem, etc.

Practical Machine Learning for Data Analysis Using Python is a problem solver's guide for creating real-world intelligent systems. It provides a comprehensive approach with concepts, practical examples, and sample code. The book teaches readers the vital skills required to understand and solve different problems with machine learning. It teaches machine learning techniques necessary for a successful practitioner, through the presentation of real-world case studies in Python machine

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learning ecosystems. The book also focuses on building a foundation of machine learning knowledge to solve different real-world case studies across various fields, including biomedical signal analysis, healthcare, security, economics, and finance. Moreover, it covers a wide range of machine learning models, including regression, classification, and forecasting. The goal of the book is to help a wide range of readers, including IT professionals, analysts, developers, data scientists, engineers, and graduate students, to solve their own real-world problems. Offers a comprehensive overview of the application of machine learning tools in data analysis across a wide range of subject areas. Teaches readers how to apply machine learning techniques to biomedical signals, financial data, and text data. Explores important classification and regression algorithms as well as other machine learning techniques. Explains how to use Python to handle data extraction, manipulation, and exploration. Covers data visualization techniques, as well as how to visualize data spread across multiple dimensions and extract features.

Feature Extraction Foundations and Applications Springer

Data mining continues to be an emerging interdisciplinary field that offers the ability to extract useful 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.

11th International Workshop, IWLCS 2008, Atlanta, GA, USA, July 13, 2008, and 12th International Workshop, IWLCS 2009, Montreal, QC, Canada, July 9, 2009, Revised Selected Papers
Concepts, Methodologies, Tools and Applications

First International Workshop, Sheffield, UK, September 7-10, 2004. Revised Lectures

Introduction to Pattern Recognition and Machine Learning

Applications of Supervised and Unsupervised Ensemble Methods

8th IAPR International Conference, PRIB 2013, Nice, France, June 17-20, 2013. Proceedings

16th International Conference, ICONIP 2009, Bangkok, Thailand, December 1-5, 2009, Proce

"This reference offers a wide-ranging selection of key research in a complex field of study, discussing topics ranging from using machine learning to improve the effectiveness of agents and multi-agent systems to developing machine learning software for high frequency trading in financial markets"--Provided by publishe

This tutorial text gives a unifying perspective on machine learning by covering both probabilistic and deterministic approaches -which are based on optimization techniques – together with the Bayesian inference approach, whose essence lies in the use of a hierarchy of probabilistic models. The book presents the major machine learning methods as they have been developed in different disciplines, such as statistics, statistical and adaptive signal processing and computer science. Focusing on the physical reasoning behind the mathematics, all the various methods and techniques are explained in depth, supported by examples and problems, giving an invaluable resource to the student and researcher for understanding and applying machine learning concepts. The book builds carefully from the basic classical methods to the most recent trends, with

chapters written to be as self-contained as possible, making the text suitable for different courses: pattern recognition, statistical/adaptive signal processing, statistical/Bayesian learning, as well as short courses on sparse modeling, deep learning, and probabilistic graphical models. All major classical techniques: Mean/Least-Squares regression and filtering, Kalman filtering, stochastic approximation and online learning, Bayesian classification, decision trees, logistic regression and boosting methods. The latest trends: Sparsity, convex analysis and optimization, online distributed algorithms, learning in RKH spaces, Bayesian inference, graphical and hidden Markov models, particle filtering, deep learning, dictionary learning and latent variables modeling. Case studies - protein folding prediction, optical character recognition, text authorship identification, fMRI data analysis, change point detection, hyperspectral image unmixing, target localization, channel equalization and echo cancellation, show how the theory can be applied. MATLAB code for all the main algorithms are available on an accompanying website, enabling the reader to experiment with the code. computing techniques.

The LNAI series reports state-of-the-art results in artificial intelligence research, development, education, at a high level and in both printed and electronic form. Enjoying tight cooperation with the R&D community, with numerous individuals,

as well as with prestigious organizations and societies, LNAI has grown into the most comprehensive artificial intelligence research forum available. The scope of LNAI spans the whole range of artificial intelligence and intelligent information processing including interdisciplinary topics in a variety of application fields.

Applications of Firefly Algorithm and its Variants

Pattern Recognition in Bioinformatics

Data Mining: Concepts, Methodologies, Tools, and Applications

International Conference, ICPRAM 2012 Vilamoura, Algarve, Portugal, February 6-8, 2012 Revised Selected Papers

Artificial Neural Networks and Machine Learning -- ICANN 2012

Machine Learning

Machine Learning Paradigms: Theory and Application

Many of the papers in this proceedings volume were presented at the PASCAL Workshop entitled Subspace, Latent Structure and Feature Selection Techniques: Statistical and Optimization Perspectives which took place in Bohinj, Slovenia during February, 23-25 2005.

This book constitutes revised selected papers from the 5th Workshop on Mining Data for Financial Applications, MIDAS 2020,

held in conjunction with ECML PKDD 2020, in Ghent, Belgium, in September 2020.* The 8 full and 3 short papers presented in this volume were carefully reviewed and selected from 15 submissions. They deal with challenges, potentialities, and applications of leveraging data-mining tasks regarding problems in the financial domain. *The workshop was held virtually due to the COVID-19 pandemic. “Information Extraction from the GDELT Database to Analyse EU Sovereign Bond Markets” and “Exploring the Predictive Power of News and Neural Machine Learning Models for Economic Forecasting” are available open access under a Creative Commons Attribution 4.0 International License via link.springer.com. The book focuses on machine learning. Divided into three parts, the first part discusses the feature selection problem. The second part then describes the application of machine learning in the classification problem, while the third part presents an overview of real-world applications of swarm-based optimization algorithms. The concept of machine learning (ML) is not new in the field of computing. However, due to the ever-changing nature of requirements in today’s world it has emerged in the form of completely new avatars. Now everyone is talking about ML-based

solution strategies for a given problem set. The book includes research articles and expository papers on the theory and algorithms of machine learning and bio-inspiring optimization, as well as papers on numerical experiments and real-world applications.

Expanding upon presentations at last year's SUEMA (Supervised and Unsupervised Ensemble Methods and Applications) meeting, this volume explores recent developments in the field. Useful examples act as a guide for practitioners in computational intelligence.

***A Bayesian and Optimization Perspective
Selected Papers from KICSS'2013 - 8th International Conference on Knowledge, Information, and Creativity Support Systems, November 7-9, 2013, Kraków, Poland***

***Handbook of Research on Emerging Perspectives in Intelligent Pattern Recognition, Analysis, and Image Processing
21st International Conference on Artificial Neural Networks, Espoo, Finland, June 14-17, 2011, Proceedings
A PCA Based and TD Based Approach***

Artificial Neural Networks and Machine Learning - ICANN 2011

This book constitutes the refereed proceedings of the First International Workshop on Machine Learning held in Sheffield, UK, in September 2004. The 19 revised full papers presented were carefully reviewed and selected for inclusion in the book. They address all current issues in the rapidly maturing field of machine learning that aims to provide practical methods for data discovery, categorisation and modelling. The particular focus of the workshop was advanced research methods in machine learning and statistical signal processing.

This book is both a reference for engineers and scientists and a teaching resource, featuring tutorial chapters and research papers on feature extraction. Until now there has been insufficient consideration of feature selection algorithms, no unified presentation of leading methods, and no systematic comparisons. Due to increasing demands for dimensionality reduction, research on feature selection has deeply and widely expanded into many fields, including computational statistics, pattern recognition, machine learning, data mining, and knowledge discovery. Highlighting current research issues, Computational Methods of

Feature Selection introduces the basic concepts and principles, state-of-the-art algorithms, and novel applications of this tool. The book begins by exploring unsupervised, randomized, and causal feature selection. It then reports on some recent results of empowering feature selection, including active feature selection, decision-border estimate, the use of ensembles with independent probes, and incremental feature selection. This is followed by discussions of weighting and local methods, such as the ReliefF family, k-means clustering, local feature relevance, and a new interpretation of Relief. The book subsequently covers text classification, a new feature selection score, and both constraint-guided and aggressive feature selection. The final section examines applications of feature selection in bioinformatics, including feature construction as well as redundancy-, ensemble-, and penalty-based feature selection. Through a clear, concise, and coherent presentation of topics, this volume systematically covers the key concepts, underlying principles, and inventive applications of feature selection, illustrating how this powerful tool can efficiently harness massive, high-dimensional data and turn it into valuable, reliable information.

This book provides a comprehensive overview of music data analysis, from introductory material to advanced concepts. It covers various applications including transcription and segmentation as well as chord and harmony, instrument and tempo recognition. It also discusses the implementation aspects of music data analysis such as architecture, user interface and hardware. It is ideal for use in university classes with an interest in music data analysis. It also could be used in computer science and statistics as well as musicology.

**Machine Learning: Concepts, Methodologies, Tools and Applications
7th International Conference, Burgos, Spain, September 20-23,
2006, Proceedings**

**16th International Conference, Athens, Greece, September 10-14,
2006, Proceedings, Part I**

Feature Extraction, Construction and Selection

Advances in Production Management Systems. Production

Management for the Factory of the Future

Artificial Intelligence and Soft Computing, Part I

Computational Methods of Feature Selection

This book constitutes the thoroughly refereed joint post-conference proceedings of

two consecutive International Workshops on Learning Classifier Systems that took place in Atlanta, GA, USA in July 2008, and in Montreal, Canada, in July 2009 - all hosted by the Genetic and Evolutionary Computation Conference, GECCO. The 12 revised full papers presented were carefully reviewed and selected from the workshop contributions. The papers are organized in topical sections on LCS in general, function approximation, LCS in complex domains, and applications. This collection of 25 research papers comprised of 22 original articles and 3 reviews is brought together from international leaders in bioinformatics and biostatistics. The collection highlights recent computational advances that improve the ability to analyze highly complex data sets to identify factors critical to cancer biology. Novel deep learning algorithms represent an emerging and highly valuable approach for collecting, characterizing and predicting clinical outcomes data. The collection highlights several of these approaches that are likely to become the foundation of research and clinical practice in the future. In fact, many of these technologies reveal new insights about basic cancer mechanisms by integrating data sets and structures that were previously immiscible. Accordingly, the series presented here bring forward a wide range of artificial intelligence approaches and statistical methods that can be applied to imaging and genomics data sets to identify previously unrecognized features that are critical for cancer. Our hope is that these articles will serve as a foundation for future research as the field of cancer biology transitions to integrating electronic health record, imaging, genomics and other complex datasets in order to develop new strategies that

improve the overall health of individual patients.

This book presents recent developments and research trends in the field of feature selection for data and pattern recognition, highlighting a number of latest advances. The field of feature selection is evolving constantly, providing numerous new algorithms, new solutions, and new applications. Some of the advances presented focus on theoretical approaches, introducing novel propositions highlighting and discussing properties of objects, and analysing the intricacies of processes and bounds on computational complexity, while others are dedicated to the specific requirements of application domains or the particularities of tasks waiting to be solved or improved. Divided into four parts - nature and representation of data; ranking and exploration of features; image, shape, motion, and audio detection and recognition; decision support systems, it is of great interest to a large section of researchers including students, professors and practitioners.

The two-volume set LNCS 4131 and LNCS 4132 constitutes the refereed proceedings of the 16th International Conference on Artificial Neural Networks, ICANN 2006. The set presents 208 revised full papers, carefully reviewed and selected from 475 submissions. This first volume presents 103 papers, organized in topical sections on feature selection and dimension reduction for regression, learning algorithms, advances in neural network learning methods, ensemble learning, hybrid architectures, and more.

Effective Statistical Learning Methods for Actuaries III

10th International Conference, ICAISC 2010, Zakopane, Poland, June13-17, 2010

Image Feature Detectors and Descriptors

Advances in Feature Selection for Data and Pattern Recognition

Mining Data for Financial Applications

Artificial Intelligence and Soft Computing – ICAISC 2008

Feature Extraction

This edited book is a collection of chapters invited and presented by experts at 10th industry symposium held during 9-12 January 2020 in conjunction with 16th edition of ICDCIT. The book covers topics, like machine learning and its applications, statistical learning, neural network learning, knowledge acquisition and learning, knowledge intensive learning, machine learning and information retrieval, machine learning for web navigation and mining, learning through mobile data mining, text and multimedia mining through machine learning, distributed and parallel learning algorithms and applications, feature extraction and classification, theories and models for plausible reasoning, computational learning theory, cognitive modelling and hybrid learning algorithms.

The two volumes LNCS 5863 and 5864 constitute the proceedings of the 16th International Conference on Neural Information Processing, ICONIP 2009, held in Bangkok, Thailand, in December

2009. The 145 regular session papers and 53 special session papers presented were carefully reviewed and selected from 466 submissions. The papers are structured in topical sections on cognitive science and computational neuroscience, neurodynamics, mathematical modeling and analysis, kernel and related methods, learning algorithms, pattern analysis, face analysis and processing, image processing, financial applications, computer vision, control and robotics, evolutionary computation, other emerging computational methods, signal, data and text processing, artificial spiking neural systems: nonlinear dynamics and engineering applications, towards brain-inspired systems, computational advances in bioinformatics, data mining for cybersecurity, evolutionary neural networks: theory and practice, hybrid and adaptive systems for computer vision and robot control, intelligent data mining, neural networks for data mining, and SOM and related subjects and its applications.

The two-volume set LNCS 7552 + 7553 constitutes the proceedings of the 22nd International Conference on Artificial Neural Networks, ICANN 2012, held in Lausanne, Switzerland, in September 2012. The 162 papers included in the proceedings were carefully reviewed and

selected from 247 submissions. They are organized in topical sections named: theoretical neural computation; information and optimization; from neurons to neuromorphism; spiking dynamics; from single neurons to networks; complex firing patterns; movement and motion; from sensation to perception; object and face recognition; reinforcement learning; bayesian and echo state networks; recurrent neural networks and reservoir computing; coding architectures; interacting with the brain; swarm intelligence and decision-making; multilayer perceptrons and kernel networks; training and learning; inference and recognition; support vector machines; self-organizing maps and clustering; clustering, mining and exploratory analysis; bioinformatics; and time series and forecasting.

The IEEE ICDM 2004 workshop on the Foundation of Data Mining and the IEEE ICDM 2005 workshop on the Foundation of Semantic Oriented Data and Web Mining focused on topics ranging from the foundations of data mining to new data mining paradigms. The workshops brought together both data mining researchers and practitioners to discuss these two topics while seeking solutions to long standing data mining problems and stimulating new data

mining research directions. We feel that the papers presented at these workshops may encourage the study of data mining as a scientific field and spark new communications and collaborations between researchers and practitioners.

To express the visions forged in the workshops to a wider range of data mining researchers and practitioners and foster active participation in the study of foundations of data mining, we edited this volume by involving extended and updated versions of selected papers presented at those workshops as well as some other relevant contributions. The content of this book includes studies of foundations of data mining from theoretical, practical, algorithmical, and managerial perspectives. The following is a brief summary of the papers contained in this book.

**22nd International Conference on Artificial Neural Networks,
Lausanne, Switzerland, September 11-14, 2012, Proceedings, Part II
A Data Mining Perspective**

Recent Advances in Ensembles for Feature Selection

Neural Information Processing

**Statistical and Optimization Perspectives Workshop, SLSFS 2005
Bohinj, Slovenia, February 23-25, 2005, Revised Selected Papers**

Learning Classifier Systems

A GA-LR wrapper approach for feature selection in network intrusion detection

This book reviews some of the most recent developments in neural networks, with a focus on applications in actuarial sciences and finance. It simultaneously introduces the relevant tools for developing and analyzing neural networks, in a style that is mathematically rigorous yet accessible. Artificial intelligence and neural networks offer a powerful alternative to statistical methods for analyzing data. Various topics are covered from feed-forward networks to deep learning, such as Bayesian learning, boosting methods and Long Short Term Memory models. All methods are applied to claims, mortality or time-series forecasting. Requiring only a basic knowledge of statistics, this book is written for masters students in the actuarial sciences and for actuaries wishing to update their skills in machine learning. This is the third of three volumes entitled Effective Statistical Learning Methods for Actuaries. Written by actuaries for actuaries, this series offers a comprehensive overview of insurance data analytics with applications to P&C, life and

health insurance. Although closely related to the other two volumes, this volume can be read independently.

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This book provides readers with a selection of high-quality chapters that cover both theoretical concepts and practical applications of image feature detectors and descriptors. It serves as reference for researchers and practitioners by featuring survey chapters and research contributions on image feature detectors and descriptors. Additionally, it emphasizes several keywords in both theoretical and practical aspects of image feature extraction. The keywords include acceleration of feature detection and extraction, hardware implantations, image segmentation, evolutionary algorithm, ordinal measures, as well as visual speech recognition.

This book offers a comprehensive overview of ensemble learning in the field of feature selection (FS), which consists of combining the output of multiple methods to obtain better

results than any single method. It reviews various techniques for combining partial results, measuring diversity and evaluating ensemble performance. With the advent of Big Data, feature selection (FS) has become more necessary than ever to achieve dimensionality reduction. With so many methods available, it is difficult to choose the most appropriate one for a given setting, thus making the ensemble paradigm an interesting alternative. The authors first focus on the foundations of ensemble learning and classical approaches, before diving into the specific aspects of ensembles for FS, such as combining partial results, measuring diversity and evaluating ensemble performance. Lastly, the book shows examples of successful applications of ensembles for FS and introduces the new challenges that researchers now face. As such, the book offers a valuable guide for all practitioners, researchers and graduate students in the areas of machine learning and data mining.