Data Mining From Remote Sensing Snow And Vegetation Product

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Advances in Earth Observation of Global Change Emilio Chuvieco 2010-08-04 Global Change studies are increasingly being considered a vital source of information to understand the Earth Environment, in particular in the framework of human-induced climate change and land use transformation. Satellite Earth Observing systems provide a unique tool to monitor those changes. While the range of applications and innovative techniques is constantly increasing, this book provides a summary of key case studies where satellite data offer critical information to understand the causes and effects of those environmental changes, minimizing their negative impacts. This book will be of interest to researchers and practitioners in the field of remote sensing, geographical information, meteorology and environmental sciences. Also scientists and graduate up to post-graduate level students in environmental science will find valuable information in this book.

Hyperspectral Remote Sensing Ruiliang Pu 2017-08-16 Advanced imaging spectral technology and hyperspectral analysis techniques for multiple applications are the key features of the book. This book will present in one volume complete solutions from concepts, fundamentals, and methods of acquisition of hyperspectral data to analyses and applications of the data in a very coherent manner. It will help readers to fully understand basic theories of HRS, how to utilize various field spectrometers and bioinstruments, the importance of radiometric correction and atmospheric correction, the use of analysis, tools and software, and determine what to do with HRS technology and data.

Frontiers of Remote Sensing Information Processing C. H. Chen 2003 Written by leaders in the field of remote sensing information processing, this book covers the frontiers of remote sensors, especially with effective algorithms for signal/image processing and pattern recognition with remote sensing data. Sensor and data fusion issues, SAR images, hyperspectral images, and related special topics are also examined. Techniques making use of neural networks, wavelet transforms, and knowledge-based systems are emphasized. A special set of three chapters is devoted to seismic analysis and discrimination. In summary, the book provides an authoritative treatment of major topics in remote sensing information processing and defines new frontiers for these areas. Contents: Data Mining; SAR Image Processing; Wavelet Analysis and Applications; Military Applications of Remote Sensing; Microwave Remote Sensing; Statistical Pattern Recognition; Automatic Target Segmentation; Neural Networks; Change Detection; Seismic Signal Processing; Time Series Prediction; Image Compression; Emerging Topics. Readership: Engineers and scientists dealing with remote sensing data in particular, and signals and images in general; computer scientists involved in software development on geophysical data analysis.

1995 Science Information Management and Data Compression Workshop James Charles Tilton 1995 Abstract: This workshop explored promising computational approaches for handling the collection, ingestion, archival and retrieval of large quantities of data in future Earth and space science missions. It consisted of fourteen presentations covering a range of information management and data compression approaches that are being or have been integrated into actual or prototypical Earth or space science data information systems, or that hold promise for such an application.

The Earth Observer 2001
Remote Sensing of Environmental Changes in Cold Regions Jinyang Du 2019-11-14 This Special Issue gathers papers reporting recent advances in the remote sensing of cold regions. It includes contributions presenting improvements in modeling microwave emissions from snow, assessment of satellite-based sea ice concentration products, satellite monitoring of ice jam and glacier lake outburst floods, satellite mapping of snow depth and soil freeze/thaw states, near-nadir interferometric imaging of surface water bodies, and remote sensing-based assessment of high arctic lake environment and vegetation recovery from wildfire disturbances in Alaska. A comprehensive review is presented to summarize the achievements, challenges, and opportunities of cold land remote sensing.

NBS Special Publication 1980
Hyperspectral Remote Sensing of Vegetation, Second Edition, Four Volume Set Prasad S. Thenkabail 2022-07-30 Written by leading global experts, including pioneers in the field, the four-volume set on Hyperspectral Remote Sensing of Vegetation, Second Edition, reviews existing state-of-the-art knowledge, highlights advances made in different areas, and provides guidance for the appropriate use of hyperspectral data in the study and management of agricultural crops and natural vegetation. Volume I, Fundamentals, Sensor Systems, Spectral Libraries, and Data Mining for Vegetation introduces the fundamentals of hyperspectral or imaging spectroscopy data, including hyperspectral data processes, sensor systems, spectral libraries, and data mining and analysis, covering both the strengths and limitations of these topics. Volume II, Hyperspectral Indices and Image Classifications for Agriculture and Vegetation evaluates the performance of hyperspectral narrowband or imaging spectroscopy data with specific emphasis on the uses and applications of hyperspectral narrowband vegetation indices in characterizing, modeling, mapping, and monitoring agricultural crops and vegetation. Volume III, Biophysical and Biochemical Characterization and Plant Species Studies demonstrates the methods that are developed and used to study terrestrial vegetation using hyperspectral data. This volume includes extensive discussions on hyperspectral data processing and how to implement data processing mechanisms for specific biophysical and biochemical applications such as crop yield modeling, crop biophysical and biochemical property characterization, and crop moisture assessments. Volume IV, Advanced Applications in Remote Sensing of Agricultural Crops and Natural Vegetation discusses the use of hyperspectral or imaging spectroscopy data in numerous specific and advanced applications, such as forest management, precision farming, managing invasive species, and local to global land cover change detection.

Big Data Mining for Climate Change Zhihua Zhang 2019-12 Big Data Mining for Climate Change addresses how to manage the vast amount of information available for analysis. Climate change and its environmental, economic and social consequences are widely recognized as the biggest, most interconnected problem facing humanity. There is a huge amount of potential information currently available...and it is growing exponentially. This book walks through the latest research and how to navigate the resources available using big data applications. It is appropriate for scientists and advanced students studying climate change from a number of disciplines, including the atmospheric sciences, oceanic sciences, geography, environment sciences, ecology, energy, economics, engineering and public policy. Provides a step-by-step guide for applying big data mining tools to climate and environmental research Presents a comprehensive review of theory and algorithms of big data mining for climate change Includes current research in climate and environmental science as it relates to using big data algorithms

Advances in Data Mining Knowledge Discovery and Applications Adem Karahoca 2012-09-12 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 same 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.

NIST Special Publication 1980

Urban Remote Sensing Xiaojun X. Yang 2021-10-06 The second edition of Urban Remote Sensing is a state-of-the-art review of the latest progress in the subject. The text examines how evolving innovations in remote sensing allow to deliver the critical information on cities in a timely and cost-effective way to support various urban management activities and the scientific research on urban morphology, socio-environmental dynamics, and sustainability. Chapters are written by leading scholars from a variety of disciplines including remote sensing, GIS, geography, urban planning, environmental science, and sustainability science, with case studies predominately drawn from North America and Europe. A review of the essential and emerging research areas in urban remote sensing including sensors, techniques, and applications, especially some critical issues that are shifting the directions in urban remote sensing research. Illustrated in full color throughout, including numerous relevant case studies and extensive discussions of important concepts and cutting-edge technologies to enable clearer understanding for non-technical audiences. Urban Remote Sensing, Second Edition will be of particular interest to upper-division undergraduate and graduate students, researchers and professionals working in the fields of remote sensing, geospatial information, and urban & environmental planning.

Space Image Processing Julio Sanchez 2018-12-19 Space Image Processing covers the design and coding of PC software for processing and manipulating imagery obtained by satellites and other spacecraft. Although the contents relate to several scientific and technological fields, it serves as a programming book, providing readers with essential technical information for developing PC applications. The material focuses on images of the planet and other celestial bodies obtained by orbiting and non-orbiting spacecraft. This book is not about raster graphics in general, but about raster graphics processing as it applies to space imagery. Three parts divide the text: 1. Science - background at an introductory level - scientific principles underlying space imagery and its processing - topics related to space and remote sensing. 2. Technology - topics related to space imagery - geodesy, cartography, image data formats, image processing. 3. Programming - code examples for DOS and Windows programming on the PC - consideration of low-level and C++ code - routines with a tutorial and demonstrative purpose.

Big Data Mining and Complexity Brian C. Castellani 2022-03-26 This book offers a much needed critical introduction to data mining and 'big data'. Supported by multiple case studies and examples, the authors provide everything needed to explore, evaluate and review big data concepts and techniques.

Earth Resources 1983

Data Mining and Knowledge Discovery for Big Data Wesley W. Chu 2013-09-24 The field of data mining has made significant and far-reaching advances over the past three decades. Because of its potential power for solving complex problems, data mining has been successfully applied to diverse areas such as business, engineering, social media, and biological science. Many of these applications search for patterns in complex structural information. In biomedicine for example, modeling complex biological systems requires linking knowledge across many levels of science, from genes to disease. Further, the data characteristics of the problems have also grown from static to dynamic and spatiotemporal, complete to incomplete, and centralized to distributed, and grow in their scope and size (this is known as big data). The effective integration of big data for decision-making also requires privacy preservation. The contributions to this monograph summarize the advances of data mining in the respective fields. This volume consists of nine chapters that address subjects ranging from mining data from opinion, spatiotemporal databases, discriminative subgraph patterns, path knowledge discovery, social media, and privacy issues to the subject of computation reduction via binary matrix factorization.

Data Mining and Knowledge Discovery in Real Life Applications Julio Ponce 2009-01-01 This book presents four different ways of theoretical and practical advances and applications of data mining in different promising areas like Industrialist, Biological, and Social. Twenty six chapters cover different special topics with proposed novel ideas. Each chapter gives an overview of the subjects and some of the chapters have cases with offered data mining solutions. We hope that this book will be a useful aid in showing a right way for the students, researchers and

practitioners in their studies.

The Geographical Sciences During 1986—2015 Shuying Leng 2016-07-28 In four chapters and an introduction, this book systematically helps readers understand the development of the Geographical Sciences both in China and in the world during the past 30 years. Through data analysis of methodologies including CiteSpace, TDA, qualitative analysis, questionnaires, data mining and mathematical statistics, the book explains the evolution of research topics and their driving factors in the Geographical Sciences and its four branches, namely Physical Geography, Human Geography, Geographical Information Science and Environmental Geography. It also identifies the role of the Geographical Sciences in the analysis of strategic issues such as global change and terrestrial ecosystems, terrestrial water cycle and water resources, land change, global cryosphere evolution and land surface processes on the Tibetan Plateau, economic globalization and local responses, regional sustainable development, remote sensing modelling and parameter inversion, spatial analysis and simulation, and tempo-spatial processes and modelling of environmental pollutants. It then discusses research development and inadequacy of Chinese Geographical Sciences in the above-mentioned topics, as well as in the fields including Geomorphology and Quaternary environmental change, Ecohydrology, ecosystem services, the urbanization process and mechanism, medical and health geography, international rivers and transboundary environment and resources, detection and attribution of changes in land surface sensitive components, and uncertainty of spatial information and spatial analysis. It shows that the NSFC has driven the development in all these topics and fields. In addition, the book summarises trends of the Geographical Sciences in China and the research level in major countries of the world through an overview of geographical education in colleges and universities, the analysis of publications, citations and author networks of SCI/SSCI and CSCD indexed articles, and the description of Sino-USA, Sino-UK and Sino-German cooperation. This book serves as an important reference to anyone interested in geographical sciences and related fields.

Comprehensive Remote Sensing 2017-11-08 Comprehensive Remote Sensing covers all aspects of the topic, with each volume edited by well-known scientists and contributed to by frontier researchers. It is a comprehensive resource that will benefit both students and researchers who want to further their understanding in this discipline. The field of remote sensing has quadrupled in size in the past two decades, and increasingly draws in individuals working in a diverse set of disciplines ranging from geographers, oceanographers, and meteorologists, to physicists and computer scientists. Researchers from a variety of backgrounds are now accessing remote sensing data, creating an urgent need for a one-stop reference work that can comprehensively document the development of remote sensing, from the basic principles, modeling and practical algorithms, to various applications. Fully comprehensive coverage of this rapidly growing discipline, giving readers a detailed overview of all aspects of Remote Sensing principles and applications Contains 'Layered content', with each article beginning with the basics and then moving on to more complex concepts Ideal for advanced undergraduates and academic researchers Includes case studies that illustrate the practical application of remote sensing principles, further enhancing understanding

Fundamentals of Satellite Remote Sensing Emilio Chuvieco 2020-01-22 Fundamentals of Satellite Remote Sensing: An Environmental Approach, Third Edition, is a definitive guide to remote sensing systems that focuses on satellite-based remote sensing tools and methods for space-based Earth observation (EO). It presents the advantages of using remote sensing data for studying and monitoring the planet, and emphasizes concepts that make the best use of satellite data. The book begins with an introduction to the basic processes that ensure the acquisition of space-borne imagery, and provides an overview of the main satellite observation systems. It then describes visual and digital image analysis, highlights various interpretation techniques, and outlines their applications to science and management. The latter part of the book covers the integration of remote sensing with Geographic Information System (GIS) for environmental analysis. This latest edition has been written to reflect a global audience and covers the most recent advances incorporated since the publication of the previous book, relating to the acquisition and interpretation of remotely sensed data. New in the Third Edition: Includes additional illustrations in full color. Uses sample images acquired from different ecosystems at different spatial resolutions to illustrate different interpretation techniques. Includes updated EO missions, such as the third generations of geostationary meteorological

satellites, the new polar orbiting platforms (Suomi), the ESA Sentinels program, and high-resolution commercial systems. Includes extended coverage of radar and LIDAR processing methods. Includes all new information on near-ground missions, including unmanned aerial vehicles (UAVs). Covers new ground sensors, as well as machine-learning approaches to classification. Adds more focus on land surface characterization, time series, change detection, and ecosystem processes. Extends the interactions of EO data and GIS that cover different environmental problems, with particular relevance to global observation. Fundamentals of Satellite Remote Sensing: An Environmental Approach, Third Edition, details the tools that provide global, recurrent, and comprehensive views of the processes affecting the Earth. As one of CRC's Essential titles, this book and stands out as one of the best in its field and is a must-have for researchers, academics, students, and professionals involved in the field of environmental science, as well as for libraries developing collections on the forefront of this industry.

Natural Hazards GIS-Based Spatial Modeling Using Data Mining Techniques Hamid Reza Pourghasemi 2018-12-13 This edited volume assesses capabilities of data mining algorithms for spatial modeling of natural hazards in different countries based on a collection of essays written by experts in the field. The book is organized on different hazards including landslides, flood, forest fire, land subsidence, earthquake, and gully erosion. Chapters were peer-reviewed by recognized scholars in the field of natural hazards research. Each chapter provides an overview on the topic, methods applied, and discusses examples used. The concepts and methods are explained at a level that allows undergraduates to understand and other readers learn through examples. This edited volume is shaped and structured to provide the reader with a comprehensive overview of all covered topics. It serves as a reference for researchers from different fields including land surveying, remote sensing, cartography, GIS, geophysics, geology, natural resources, and geography. It also serves as a guide for researchers, students, organizations, and decision makers active in land use planning and hazard management.

Multiscale Hydrologic Remote Sensing Ni-Bin Chang 2012-03-23 Multiscale Hydrologic Remote Sensing: Perspectives and Applications integrates advances in hydrologic science and innovative remote sensing technologies. Raising the visibility of interdisciplinary research on water resources, it offers a suite of tools and platforms for investigating spatially and temporally continuous hydrological variables and p

Machine Learning Methods in the Environmental Sciences William W. Hsieh 2009-07-30 A graduate textbook that provides a unified treatment of machine learning methods and their applications in the environmental sciences.

Digital Mapping of Soil Landscape Parameters Pradeep Kumar Garg 2020-02-20 This book addresses the mapping of soil-landscape parameters in the geospatial domain. It begins by discussing the fundamental concepts, and then explains how machine learning and geomatics can be applied for more efficient mapping and to improve our understanding and management of 'soil'. The judicious utilization of a piece of land is one of the biggest and most important current challenges, especially in light of the rapid global urbanization, which requires continuous monitoring of resource consumption. The book provides a clear overview of how machine learning can be used to analyze remote sensing data to monitor the key parameters, below, at, and above the surface. It not only offers insights into the approaches, but also allows readers to learn about the challenges and issues associated with the digital mapping of these parameters and to gain a better understanding of the selection of data to represent soil-landscape relationships as well as the complex and interconnected links between soil-landscape parameters under a range of soil and climatic conditions. Lastly, the book sheds light on using the network of satellite-based Earth observations to provide solutions toward smart farming and smart land management.

Remote Sensing of Global Croplands for Food Security Prasad Thenkabail 2009-06-24 Increases in populations have created an increasing demand for food crops while increases in demand for biofuels have created an increase in demand for fuel crops. What has not increased is the amount of croplands and their productivity. These and many other factors such as decreasing water resources in a changing climate have created a crisis like situation in global food security. Decision makers in these situations need accurate information based on science. Remote Sensing of Global Croplands for Food Security provides a comprehensive knowledge base in use of satellite sensor-based maps

and statistics that can be used to develop strategies for croplands (irrigated and rainfed) and their water use for food security. Over 50 Multi-disciplinary Global Experts Give Insight and Provide Practical Approaches Emphasizing practical mapping technologies based on advanced remote sensing data and methods, this book provides approaches for estimating irrigated and rainfed cropland areas and their water use on a national, continental, or global basis. Written by 50+ leading experts working at the forefront of this critical area, it offers case studies from a variety of continents highlighting the subtle requirements of each. In a very practical way it demonstrates the experience, utility, and models for determining water resources used and resulting yields of irrigated and rainfed croplands. The authors discuss: (a) innovative methods used for mapping croplands, (b) approaches adopted to collect cropland data in different countries by traditional and non-traditional means, (c) accuracies, uncertainties, and errors involved in producing cropland products, (d) surface energy balance models used to assess crop water use, and (e) extensive results and outcomes pertaining to global croplands and their water use. Develop Strategies for an Enhanced Green Revolution and an Accelerated Blue Revolution Linking croplands to water use and food security, the book provides a global perspective on this sensitive issue. It gives insight into the extent of cropland usage, their spatial distribution, their cropping intensities, and their water use patterns. The editors collect the experience, methods, models, and results that show the way forward and help in decision-making on water resources and food security. All of this is required for developing strategies for an enhanced green revolution and for an accelerated blue revolution.

Remote Sensing Time Series Image Processing Qihao Weng 2018-04-17 Today, remote sensing technology is an essential tool for understanding the Earth and managing human-Earth interactions. There is a rapidly growing need for remote sensing and Earth observation technology that enables monitoring of world's natural resources and environments, managing exposure to natural and man-made risks and more frequently occurring disasters, and helping the sustainability and productivity of natural and human ecosystems. The improvement in temporal resolution/revisit allows for the large accumulation of images for a specific location, creating a possibility for time series image analysis and eventual real-time assessments of scene dynamics. As an authoritative text, Remote Sensing Time Series Image Processing brings together active and recognized authors in the field of time series image analysis and presents to the readers the current state of knowledge and its future directions. Divided into three parts, the first addresses methods and techniques for generating time series image datasets. In particular, it provides guidance on the selection of cloud and cloud shadow detection algorithms for various applications. Part II examines feature development and information extraction methods for time series imagery. It presents some key remote sensing-based metrics, and their major applications in ecosystems and climate change studies. Part III illustrates various applications of time series image processing in land cover change, disturbance attribution, vegetation dynamics, and urbanization. This book is intended for researchers, practitioners, and students in both remote sensing and imaging science. It can be used as a textbook by undergraduate and graduate students majoring in remote sensing, imaging science, civil and electrical engineering, geography, geosciences, planning, environmental science, land use, energy, and GIS, and as a reference book by practitioners and professionals in the government, commercial, and industrial sectors.

Artificial Intelligence in Data Mining D. Binu 2021-02-17 Artificial Intelligence in Data Mining: Theories and Applications offers a comprehensive introduction to data mining theories, relevant AI techniques, and their many real-world applications. This book is written by experienced engineers for engineers, biomedical engineers, and researchers in neural networks, as well as computer scientists with an interest in the area. Provides coverage of the fundamentals of Artificial Intelligence as applied to data mining, including computational intelligence and unsupervised learning methods for data clustering Presents coverage of key topics such as heuristic methods for data clustering, deep learning methods for data classification, and neural networks Includes case studies and real-world applications of AI techniques in data mining, for improved outcomes in clinical diagnosis, satellite data extraction, agriculture, security and defense

Data Mining for Geoinformatics Guido Cervone 2013-08-16 The rate at which geospatial data is being generated exceeds our computational capabilities to extract patterns for the understanding of a dynamically changing world. Geoinformatics and data mining focuses on the

development and implementation of computational algorithms to solve these problems. This unique volume contains a collection of chapters on state-of-the-art data mining techniques applied to geoinformatic problems of high complexity and important societal value. Data Mining for Geoinformatics addresses current concerns and developments relating to spatio-temporal data mining issues in remotely-sensed data, problems in meteorological data such as tornado formation, estimation of radiation from the Fukushima nuclear power plant, simulations of traffic data using OpenStreetMap, real time traffic applications of data stream mining, visual analytics of traffic and weather data and the exploratory visualization of collective, mobile objects such as the flocking behavior of wild chickens. This book is designed for researchers and advanced-level students focused on computer science, earth science and geography as a reference or secondary text book. Practitioners working in the areas of data mining and geoscience will also find this book to be a valuable reference.

Fundamentals, Sensor Systems, Spectral Libraries, and Data Mining for Vegetation Prasad S. Thenkabail 2018-12-07 Written by leading global experts, including pioneers in the field, the four-volume set on Hyperspectral Remote Sensing of Vegetation, Second Edition, reviews existing state-of-the-art knowledge, highlights advances made in different areas, and provides guidance for the appropriate use of hyperspectral data in the study and management of agricultural crops and natural vegetation. Volume I, Fundamentals, Sensor Systems, Spectral Libraries, and Data Mining for Vegetation introduces the fundamentals of hyperspectral or imaging spectroscopy data, including hyperspectral data processes, sensor systems, spectral libraries, and data mining and analysis, covering both the strengths and limitations of these topics. This book also presents and discusses hyperspectral narrowband data acquired in numerous unique spectral bands in the entire length of the spectrum from various ground-based, airborne, and spaceborne platforms. The concluding chapter provides readers with useful guidance on the highlights and essence of Volume I through the editors' perspective. Key Features of Volume I: Provides the fundamentals of hyperspectral remote sensing used in agricultural crops and vegetation studies. Discusses the latest advances in hyperspectral remote sensing of ecosystems and croplands. Develops online hyperspectral libraries, proximal sensing and phenotyping for understanding, modeling, mapping, and monitoring crop and vegetation traits. Implements reflectance spectroscopy of soils and vegetation. Enumerates hyperspectral data mining and data processing methods, approaches, and machine learning algorithms. Explores methods and approaches for data mining and overcoming data redundancy; Highlights the advanced methods for hyperspectral data processing steps by developing or implementing appropriate algorithms and coding the same for processing on a cloud computing platform like the Google Earth Engine. Integrates hyperspectral with other data, such as the LiDAR data, in the study of vegetation. Includes best global expertise on hyperspectral remote sensing of agriculture, crop water use, plant species detection, crop productivity and water productivity mapping, and modeling.

Environmental Applications of Remote Sensing and GIS in Libya Hamdi A. Zurqani 2022-07-31 This book addresses the environmental challenges that Libya and similar countries in the regions are currently facing. Each chapter of this book provides a methodology using remote sensing (RS) and geographical information systems (GIS) dealing with one of these environmental challenges such as monitoring and mapping soil salinity and prediction of soil properties, monitoring and mapping of land degradation, spatiotemporal land use/cover, agricultural drought monitoring, hydrological applications such as spatial rainfall distribution, surface runoff, geo-morphometric analysis, flood hazard assessment and mapping, hydrologic and hydraulic modeling, pollution hazard assessment, and climate-related geophysical processes. This book also assesses the impacts of climate change on natural resources using both RS and GIS, as well as other applications, covering different parts of Libya. This book is beneficial for graduate students, researchers, policy planners, and stakeholders in Libya as well as other countries that share similar environmental issues. Also, the methodologies followed in the book's chapters can be applied to any other regions around the world with similar landscapes and climatic conditions.

A Decade of Trans-European Remote Sensing Cooperation M.F. Buchroithner 2001-01-01 An exploration of systems providing hyperdimensional data with accuracy and fine resolution. The volume reflects the research results of the network of the EARSeL member laboratories. Topics include: data mining; agriculture and forestry;

techniques and methods; hyperdimensional data; and more.
Machine Vision and Advanced Image Processing in Remote Sensing Ioannis Kanellopoulos 2012-12-06 Since 1994, the European Commission has undertaken various actions to expand the use of Earth observation (EO) from space in the Union and to stimulate value-added services based on the use of Earth observation satellite data.' By supporting research and technological development activities in this area, DG XII responded to the need to increase the cost-effectiveness of space derived environmental information. At the same time, it has contributed to a better exploitation of this unique technology, which is a key source of data for environmental monitoring from local to global scale. MAVIRIC is part of the investment made in the context of the Environ ment and Climate Programme (1994-1998) to strengthen applied techniques, based on a better understanding of the link between the remote sensing signal and the underlying bio- geo-physical processes. Translation of this scientific know-how into practical algorithms or methods is a priority in order to con vert more quickly, effectively and accurately space signals into geographical information. Now the availability of high spatial resolution satellite data is rapidly evolving and the fusion of data from different sensors including radar sensors is progressing well, the question arises whether existing machine vision approaches could be advantageously used by the remote sensing community. Automatic feature/object extraction from remotely sensed images looks very attractive in terms of processing time, standardisation and implementation of operational processing chains, but it remains highly complex when applied to natural scenes.

Applications of Geomatics in Civil Engineering Jayanta Kumar Ghosh 2019-06-19 This book comprises select proceedings of the First International Conference on Geomatics in Civil Engineering (ICGCE 2018). This book presents latest research on applications of geomatics engineering in different domains of civil engineering, like structural engineering, geotechnical engineering, hydraulic and water resources engineering, environmental engineering and transportation engineering. It also covers miscellaneous applications of geomatics in a wide range of technical and societal problems making use of geospatial information, engineering principles, and relational data structures involving measurement sciences. The book proves to be very useful for the scientific and engineering community working in the field of geomatics and geospatial technology.

Hyperspectral Remote Sensing and Spectral Signature Applications S. Rajendran 2009 Contributed papers presented at the National Seminar on "Hyperspectral Remote Sensing and Spectral Signature Databse Management System," held on February 14-15, 2008 at Annamalai University.
Multisensor Data Fusion and Machine Learning for Environmental Remote Sensing Ni-Bin Chang 2018-02-21 In the last few years the scientific community has realized that obtaining a better understanding of interactions between natural systems and the man-made environment across different scales demands more research efforts in remote sensing. An integrated Earth system observatory that merges surface-based, air-borne, space-borne, and even underground sensors with comprehensive and predictive capabilities indicates promise for revolutionizing the study of global water, energy, and carbon cycles as well as land use and land cover changes. The aim of this book is to present a suite of relevant concepts, tools, and methods of integrated multisensor data fusion and machine learning technologies to promote environmental sustainability. The process of machine learning for intelligent feature extraction consists of regular, deep, and fast learning algorithms. The niche for integrating data fusion and machine learning for remote sensing rests upon the creation of a new scientific architecture in remote sensing science that is designed to support numerical as well as symbolic feature extraction managed by several cognitively oriented machine learning tasks at finer scales. By grouping a suite of satellites with similar nature in platform design, data merging may come to help for cloudy pixel reconstruction over the space domain or concatenation of time series images over the time domain, or even both simultaneously. Organized in 5 parts, from Fundamental Principles of Remote Sensing; Feature Extraction for Remote Sensing; Image and Data Fusion for Remote Sensing; Integrated Data Merging, Data Reconstruction, Data Fusion, and Machine Learning; to Remote Sensing for Environmental Decision Analysis, the book will be a useful reference for graduate students, academic scholars, and working professionals who are involved in the study of Earth systems and the environment for a sustainable future. The new knowledge in this book can be applied successfully in many areas of environmental science and engineering.

Hydraulic Research in the United States and Canada United States. National Bureau of Standards 1978

Climate Impacts on Sustainable Natural Resource Management Pavan Kumar 2021-11-16 CLIMATE IMPACTS ON SUSTAINABLE NATURAL RESOURCE MANAGEMENT Climate change has emerged as one of the predominant global concerns of the 21st century. Statistics show that the average surface temperature of the Earth has increased by about 1.18°C since the late 19th century and the sea levels are rising due to the melting of glaciers. Further rise in the global temperature will have dire consequences for the survival of humans on the planet Earth. There is a need to monitor climatic data and associated drivers of changes to develop sustainable planning. The anthropogenic activities that are linked to climate change need scientific evaluation and must be curtailed before it is too late. This book contributes significantly in the field of sustainable natural resource management linked to climate change. Up to date research findings from developing and developed countries like India, Indonesia, Japan, Malaysia, Sri Lanka and the USA have been presented through selected case studies covering different thematic areas. The book has been organised into six major themes of sustainable natural resource management, determinants of forest productivity, agriculture and climate change, water resource management and riverine health, climate change threat on natural resources, and linkages between natural resources and biotic-abiotic stressors to develop the concept and to present the findings in a way that is useful for a wide range of readers. While the range of applications and innovative techniques is constantly increasing, this book provides a summary of findings to provide the updated information. This book will be of interest to researchers and practitioners in the field of environmental sciences, remote sensing, geographical information system, meteorology, sociology and policy studies related to natural resource management and climate change.

Hydraulic Research in the United States and Canada, 1978 Pauline H. Gurewitz 1980

Numerical Methods for Reliability and Safety Assessment Seifedine Kadry 2014-09-30 This book offers unique insight on structural safety and reliability by combining computational methods that address multiphysics problems, involving multiple equations describing different physical phenomena and multiscale problems, involving discrete sub-problems that together describe important aspects of a system at multiple scales. The book examines a range of engineering domains and problems using dynamic analysis, nonlinear methods, error estimation, finite element analysis and other computational techniques. This book also: · Introduces novel numerical methods · Illustrates new practical applications · Examines recent engineering applications · Presents up-to-date theoretical results · Offers perspective relevant to a wide audience, including teaching faculty/graduate students, researchers and practicing engineers.

Advances in Data Mining Knowledge Discovery and Applications Adem Karahoca 2012-09-12 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 same 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.