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Remote Sensing of Aerosols, Clouds, and Precipitation compiles recent advances in aerosol, cloud, and precipitation remote sensing from new satellite observations. The book examines a wide range of measurements from microwave (both active and passive), visible, and infrared portions of the spectrum. Contributors are experts conducting state-of-the-art research in atmospheric remote sensing using space, airborne, and ground-based datasets, focusing on supporting earth observation satellite missions for aerosol, cloud, and precipitation studies. A handy reference for scientists working in remote sensing, earth science, electromagnetics, climate physics, and space engineering. Valuable for operational forecasters, meteorologists, geospatial experts, modelers, and policymakers alike. Presents new approaches in the field, along with further research opportunities, based on the latest satellite data Focuses on how remote sensing systems can be designed/developed to solve outstanding problems in earth and atmospheric sciences Edited by a dynamic team of editors with a mixture of highly skilled and qualified authors offering world-leading expertise in the field

This book constitutes the proceedings of the 10th International Conference on Advanced Data Mining and Applications, ADMA 2014, held in Guilin, China during December 2014. The 48 regular papers and 10 workshop papers presented in this volume were carefully reviewed and selected from 90 submissions. They deal with the following topics: data mining, social network and social media, recommend systems, database, dimensionality reduction, advance machine learning techniques, classification, big data and applications, clustering methods, machine learning, and data mining and database.

Predicting Meteorological Events: Mathematical Approach deals with some important problems covering various important areas of atmospheric and meteorological sciences. These include cyclonic storms, monsoon prediction, monsoon depression over the Indian region, disaster management using satellite data. This volume will be highly useful for practising meteorologists working in the National Weather Services and scientists involved in the development of mathematical and statistical models of various meteorological events.

International Journal of Advanced Remote Sensing and GIS (IJARSG, ISSN 2320 – 0243) is an open-access peer-reviewed scholarly journal publishes original research papers, reviews, case study, case reports, and methodology articles in all aspects of Remote Sensing and GIS including associated fields. This Journal commits to working for quality and transparency in its publishing by following standard Publication Ethics and Policies.

A volume in the three-volume Remote Sensing Handbook series, Remote Sensing of Water Resources, Disasters, and Urban Studies documents the scientific and methodological advances that have taken place during the last 50 years. The other two volumes in the series are Remotely Sensed Data Characterization, Classification, and Accuracies, and Land Reso

The oceans cover approximately 71% of Earth’s surface, 90% of the biosphere and contains 97% of Earth’s water. Since the first launch of SEASAT satellite in 1978, an increasing number of SAR satellites have or will become available, such as the European Space Agency’s ERS-1/-2, ENVISAT, and Sentinel-1 series; the Canadian RADARSAT-1/-2 and the upcoming RADARSAT Constellation Mission series satellites; the Italian COSMO-SkyMed satellites, the German TERRASAR-X and TANDEM-X, and the Chinese GAOFEN-3 SAR, among others. Recently, European Space Agency has launched a new generation of SAR satellites, Sentinel-1A in 2014 and Sentinel-1B in 2016. These SAR satellites provide researchers with free and open SAR images necessary to carry out their research on the global oceans. The scope of Advances in SAR Remote Sensing of Oceans is to demonstrate the types of information that can be obtained from SAR images of the oceans, and the cutting-edge methods needed for analysing SAR images. Written by leading experts in the field, and divided into four sections, the book presents the basic principles of radar backscattering from the ocean surface; introduces the recent progresses in SAR remote sensing of dynamic coastal environment and management; discusses the state-of-the-art methods to monitor parameters or phenomena related to the dynamic ocean environment; and deals specifically with new techniques and findings of marine atmospheric boundary layer observations. Advances in SAR Remote Sensing of Oceans is a very comprehensive and up-to-date reference intended for use by graduate students, researchers, practitioners, and R&D engineers working in the vibrant field of oceans, interested to understand how SAR remote sensing can support oceanography research and applications.

Computer-aided design (CAD) plays a key role in improving biomedical systems for various applications. It also helps in the detection, identification, predication, analysis, and classification of diseases, in the management of chronic conditions, and in the delivery of health services. This book discusses the uses of CAD to solve real-world problems and challenges in biomedical systems with the help of appropriate case studies and research simulation results. Aiming to overcome the gap between CAD and biomedical science, it describes behaviors, concepts, fundamentals, principles, case studies, and future directions for research, including the automatic identification of related disorders using CAD. Features: Proposes CAD for the study of biomedical signals to understand physiology and to improve healthcare systems’ ability to diagnose and identify health disorders. Presents concepts of CAD for biomedical modalities in different disorders. Discusses design and simulation examples, issues, and challenges. Illustrates bio-potential signals and their appropriate use in studying different disorders. Includes case studies, practical examples, and research directions. Computer-Aided Design and Diagnosis Methods for Biometrical Applications is aimed at researchers, graduate students in biomedical engineering, image processing, biomedical technology, medical imaging, and health informatics.

The ICCASCE 2015 conference covers a wide range of fields in science and engineering innovation and aims to bring together engineering technology expertise. Scientists, scholars, engineers and students from universities, research institutes and industries all around the world gathered to present on-going research activities. This proceedings volume

Squid, cuttlefish and octopuses, which form the marine mollusc group the cephalopods, are of great and increasing interest to marine biologists, physiologists, ecologists, environmental biologists and fisheries scientists. Cephalopods: ecology and fisheries is a thorough review of this most important animal group. The first introductory section of the book provides coverage of cephalopod form and function, origin and evolution, Nautilus, and biodiversity and zoogeography. The following section covers life cycles, growth, physiological ecology, reproductive strategies and early life histories. There follows a section on ecology, which provides details of slope and shelf species, oceanic and deep sea species, population ecology, trophic ecology and cephalopods as prey. The final section of the book deals with fisheries and ecological interactions, with chapters on fishing methods and scientific sampling, fisheries resources, fisheries oceanography and assessment and management methods. This scientifically comprehensive and beautifully illustrated book is essential reading for marine biologists, zoologists, ecologists and fisheries managers. All libraries in universities and research establishments where biological sciences and fisheries are studied and taught should have multiple copies of this landmark publication on their shelves.

The aim of this book is to demonstrate the use of SAR data in three application domains, i.e. land cover (Part II), topography (Part III), and land motion (Part IV). These are preceded by Part I, where an extensive and complete review on speckle and adaptive filtering is provided, essential for the understanding of SAR images. Part II is dedicated to land cover mapping. Part III is devoted to the generation of Digital Elevation Models based on radargrammetry and on a wise fusion (by considering sensor characteristic and acquisition geometry) of interferometric and photogrammetric elevation data. Part IV provides a contribution to three applications related to land motion.

Proceedings of SPIE present the original research papers presented at SPIE conferences and other high-quality conferences in the broad-ranging fields of optics and photonics. These books provide prompt access to the latest innovations in research and technology in their respective fields. Proceedings of SPIE are among the most cited references in patent literature.

A volume in the Remote Sensing Handbook series, Remotely Sensed Data Characterization, Classification, and Accuracies documents the scientific and methodological advances that have taken place during the last 50 years. The other two volumes in the series are Land Resources Monitoring, Modeling, and Mapping with Remote Sensing, and Remote Sensing of

Forests cover approximately 26% of the world's land surface area and represent a distinct biotic community. They interact with water and soil in a variety of ways, providing canopy surfaces which trap precipitation and allow evaporation back into the atmosphere, thus regulating how much water reaches the forest floor as through fall, as well as pull water from the soil for transpiration. The discipline "forest hydrology" has been developed throughout the 20th century. During that time human intervention in natural landscapes has increased, and land use and management practices have intensified. The book will be useful for graduate students, professionals, land managers, practitioners, and researchers with a good understanding of the basic principles of hydrology and hydrologic processes.

The work is aimed at the review of hot topics in modern light scattering and radiative transfer. A special attention will be given to the description of the methods of integro-differential radiative transfer equation solution. In particular, the asymptotic radiative transfer and the method of discrete ordinates will be considered. A comprehensive review of light absorption in the terrestrial atmosphere will be given as well. The inverse problem solution will be reviewed as well.

As computer and space technologies have been developed, geoscience information systems (GIS) and remote sensing (RS) technologies, which deal with the geospatial information, have been rapidly maturing. Moreover, over the last few decades, machine learning techniques including artificial neural network (ANN), deep learning, decision tree, and support vector machine (SVM) have been successfully applied to geospatial science and engineering research fields. The machine learning techniques have been widely applied to GIS and RS research fields and have recently produced valuable results in the areas of geoscience, environment, natural hazards, and natural resources. This book is a collection representing novel contributions detailing machine learning techniques as applied to geoscience information systems and remote sensing.

This book contains a selection of the latest research in the field of Computational Social Science (CSS) methods, uses, and results, as presented at the 2018 annual conference of the CSSSA. This conference was held in Santa Fe, New Mexico, October 25 – 28, 2018, at the Drury Plaza Hotel. CSS investigates social and behavioral dynamics in both nature and society, through computer simulation, network analysis, and the science of complex systems. The Computational Social Science Society of the Americas (CSSSA) is a professional society that aims to advance the field of CSS in all its areas, from fundamental principles to real-world applications, by holding conferences and workshops, promoting standards of scientific excellence in research and teaching, and publishing novel research findings. What follows is a diverse representation of new approaches and research findings, using the tools of CSS and Agent-Based Modeling (ABM) in exploring complex phenomena across many different domains. Readers will not only have the methods and results of these specific projects on which to build, but will also gain a greater appreciation for the broad scope of CSS, and have a wealth of case-study examples that can serve as meaningful exemplars for new research projects and activities. This book, we hope, will appeal to any researchers and students working in the social sciences, broadly defined, who aim to better understand and apply the concepts of Complex Adaptive Systems to their work.

Geodesy, which is the science of measuring the size and shape of the Earth, explores the theory, instrumentation and results from modern geodetic systems. The beginning sections of the volume cover the theory of the Earth's gravity field, the instrumentation for measuring the field, and its temporal variations. The measurements and results obtained from variations in the rotation of the Earth are covered in the sections on short and long period rotation hanges. Space based geodetic methods, including the global positioning system (GPS) and Interferometric synthetic aperture radar (SAR), are also examined in detail. Self-contained volume starts with an overview of the subject then explores each topic with in depth detail Extensive reference lists and cross references with other volumes to facilitate further research Full-color figures and tables support the text and aid in understanding Content suited for both the expert and non-expert

This volume collects and presents the fundamentals, tools, and processes of utilizing geospatial information technologies to process remotely sensed data for use in agricultural monitoring and management. The issues related to handling digital agro-geoinformation, such as collecting (including field visits and remote sensing), processing, storing, archiving, preservation, retrieving, transmitting, accessing, visualization, analyzing, synthesizing, presenting, and disseminating agro-geoinformation have never before been systematically documented in one volume. The book is edited by International Conference on Agro-Geoinformatics organizers Dr. Liping Di (George Mason University), who coined the term “Agro-Geoinformatics” in 2012, and Dr. Berk Üstünda? (Istanbul Technical University) and are uniquely positioned to curate and edit this foundational text. The book is composed of eighteen chapters that can each stand alone but also build on each other to give the reader a comprehensive understanding of agro-geoinformatics and what the tools and processes that compose the field can accomplish. Topics covered include land parcel identification, image processing in agricultural observation systems, databasing and managing agricultural data, crop status monitoring, moisture and evapotranspiration assessment, flood damage monitoring, agricultural decision support systems and more.

This is a book is a collection of articles that will be submitted as full papers to the AGILE annual international conference. These papers go through a rigorous review process and report original and unpublished fundamental scientific research. Those published cover significant research in the domain of geographic information science systems. This year the focus is on geographic information science as an enabler of smarter cities and communities, thus we expect contributions that help visualize the role and contribution of GI science in their development.

Management of Marine Plastic Debris gives a thorough and detailed presentation of the global problem of marine plastics debris, covering every aspect of its management from tracking, collecting, treating and commercial exploitation for handing this anthropogenic waste. The book is a unique, essential source of information on current and future technologies aimed at reducing the impact of plastics waste in the oceans. This is a practical book designed to enable engineers to tackle this problem—both in stopping plastics from getting into the ocean in the first place, as well as providing viable options for the reuse and recycling of plastics debris once it has been recovered. The book is essential reading not only for materials scientists and engineers, but also other scientists involved in this area seeking to know more about the impact of marine plastics debris on the environment, the mechanisms by which plastics degrade in water and potential solutions. While much research has been undertaken into the different approaches to the increasing problem of plastics marine debris, this is the first book to present, evaluate and compare all of the available techniques and practices, and then make suggestions for future developments. The book also includes a detailed discussion of the regulatory environment, including international conventions and standards and national policies. Reviews all available processes and techniques for recovering, cleaning and recycling marine plastic debris Presents and evaluates viable options for engineers to tackle this growing problem, including the use of alternative polymers Investigates a wide range of possible applications of marine plastics debris and opportunities for businesses to make a positive environmental impact Includes a detailed discussion of the regulatory environment, including international conventions and standards and national policies

Introduction to Unmanned Aircraft Systems surveys the fundamentals of unmanned aircraft system (UAS) operations, from sensors, controls, and automation to regulations, safety procedures, and human factors. It is designed for the student or layperson and thus assumes no prior knowledge of UASs, engineering, or aeronautics. Dynamic and well-illustrated, the first edition of this popular primer was created in response to a need for a suitable university-level textbook on the subject. Fully updated and significantly expanded, this new Second Edition: Reflects the proliferation of technological capability, miniaturization, and demand for aerial intelligence in a post-9/11 world Presents the latest major commercial uses of UASs and unmanned aerial vehicles (UAVs) Enhances its coverage with greater depth and support for more advanced

coursework Provides material appropriate for introductory UAS coursework in both aviation and aerospace engineering programs Introduction to Unmanned Aircraft Systems, Second Edition capitalizes on the expertise of contributing authors to instill a practical, up-to-date understanding of what it takes to safely operate UASs in the National Airspace System (NAS). Complete with end-of-chapter discussion questions, this book makes an ideal textbook for a first course in UAS operations.

Increasingly used to analyze and manage marine and coastal zones, Geographical Information Systems (GIS) provide a powerful set of tools for integrating and processing spatial information. These technologies are increasingly used in the management and analysis of the coastal zone. Supplying the guidance necessary to use these tools, GIS for Coastal

This book presents most recent research studies on mapping and spatial analysis of socio-economic and environmental indicators used by various national and international contributors to regional development projects. It gathers the best contributions to the 1st International Conference on Mapping and Spatial Analysis of Socio-Economic and Environmental Indicators for the Local and Regional Sustainable Development. The conference was held in southern Tunisia, Tataouine in March 2015.The research studies focused on generating and analyzing indicators in various domains of Agriculture, Energy, Industry, Tourism, Transport, Urban Planning, Exploitation of Natural Resources, Infrastructure, Health, Environment, Education, Information and Communication Technologies, Social Affairs and Employability, and Culture and Sport. Socio-economic and environmental indicators are important in regional development plans and strategies as they allow to observe and analyze changes in the economic growth and to measure their impact on the environment and on social networks/daily life of citizens. On the basis of well-defined geomatic approaches, and particularly, through sophisticated digital mapping and spatio-temporal analyses, authors focused on retrieving indicators to evaluate the exploitation rate of natural resources, intensity of the energy consumption in various economic sector, net migratory flows, quality checking of the air in urban areas, adaptation to climate change, and vulnerability of the coastal domain and risk of marine submersion due to sea-level rise. The book is of interest not only to investors and contributors to regional development projects, but also to all relevant policy makers.

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

This book constitutes the refereed proceedings of the 13th International Conference on Advanced Concepts for Intelligent Vision Systems, ACIVS 2011, held in Ghent, Belgium, in August 2011. The 66 revised full papers presented were carefully reviewed and selected from 124 submissions. The papers are organized in topical sections on classification recognition, and tracking, segmentation, images analysis, image processing, video surveillance and biometrics, algorithms and optimization; and 3D, depth and scene understanding.

The frontiers of technologies have been constantly expanded in many industries around the world, including the agricultural sector. Among many “frontier technologies” in agriculture, are protected agriculture, precision agriculture, and vertical farming, all of which depart substantially from many conventional agricultural production methods. It is not yet clear how these technologies can become adoptable in developing countries, including, for example, South Asian countries like India. This paper briefly reviews the issues associated withthese three types of frontier technologies. We do so by systematically checkingthe academic articleslisted in Google Scholar, which primarily focus on these technologies in developing countries in Asia. Where appropriate, a few widely-cited overview articles for each technology were also reviewed. The findings generally reveal where performances of these technologiescan be raised potentially, based on the general trends in the literature. Where evidence is rich, some generalizable economic insights about these technologies are provided. For protected agriculture, recent research has focusedsignificantly on various features of protective structures (tunnel heights, covering materials, shading structures, frames and sizes) indicating that there are potentials for adaptive research on such structures to raise the productivity of protected agriculture. The research on protected agriculture also focuses on types of climate parameters controlled, andenergy structures, among others. For precision agriculture, recent research has focused on the spatial variability of production environments, development of efficient and suitable data management systems, efficiency of various types of image analyses and optical sensing, efficiency of sensors and related technologies, designs of precision agriculture equipment, optimal inputs and service uses, and their spatial allocations, potentials of unmanned aerial vehicles (UAVs) and nano-technologies. For vertical farming, research has often highlighted the variations in technologies based on out-door / indoor systems, ways to improve plants’ access to light (natural or artificial), growing medium and nutrient / water supply, advanced features like electricity generation and integration of production space into an office / residential space, and water treatment. For India, issues listed above may be some of the key areas that the country can draw on from other more advanced countries in Asia, or can focus in its adaptive research to improve the relevance and applicability of these technologies to the country.

Current events help to emphasise the importance of the analysis and management of risk to planners and researchers around the world. Natural hazards such as floods, earthquakes, landslides, fires and others have always affected human

societies. The more recent emergence of the importance of man-made hazards is a consequence of the rapid technological advances made in the last few centuries. The interaction of natural and anthropogenic risks adds to the complexity of the problems. Presented at the 12th International Conference on Risk Analysis and Hazard Mitigation, the included research works cover a variety of topics related to risk analysis and hazard mitigation, associated with both natural and anthropogenic hazards.

This book provides extensive insight on remote sensing of coastal waters from aircraft and space-based platforms. The primary focus of the book is optical remote sensing using passive instruments, to measure and analyze the coastal aquatic environment. The authors have gathered information from a variety of sources, to help non-specialists grasp new techniques and technology, to quickly produce useful data

Monitoring of Harmful Algae Blooms is a timely guide to the research techniques in use to monitor visible algae blooms and through remote sensing, including infrared techniques, predict them through mathematical modeling. Drawing on current and future satellite data, the book presents visible perspectives on a more efficient HAB monitoring system for the future. It also emphasizes practical applications, impacting on marine ecology, national economy, health, food and safety and quality assurance.

This book aims to promote the core understanding of a proper modelling of road traffic accidents by deep learning methods using traffic information and road geometry delineated from laser scanning data. The first two chapters of the book introduce the reader to laser scanning technology with creative explanation and graphical illustrations, review and recent methods of extracting geometric road parameters. The next three chapters present different machine learning and statistical techniques applied to extract road geometry information from laser scanning data. Chapters 6 and 7 present methods for modelling roadside features and automatic road geometry identification in vector data. After that, this book goes on reviewing methods used for road traffic accident modelling including accident frequency and injury severity of the traffic accident (Chapter 8). Then, the next chapter explores the details of neural networks and their performance in predicting the traffic accidents along with a comparison with common data mining models. Chapter 10 presents a novel hybrid model combining extreme gradient boosting and deep neural networks for predicting injury severity of road traffic accidents. This chapter is followed by deep learning applications in modelling accident data using feed-forward, convolutional, recurrent neural network models (Chapter 11). The final chapter (Chapter 12) presents a procedure for modelling traffic accident with little data based on the concept of transfer learning. This book aims to help graduate students, professionals, decision makers, and road planners in developing better traffic accident prediction models using advanced neural networks.

This book is a baseline reference for researchers, environmentalist, planners, policy makers as well as administrators who are concerned with the future of the planet Earth.

This volume fills a research gap between the rapid development of High Performance Computing (HPC) approaches and their geospatial applications. With a focus on geospatial applications, the book discusses in detail how researchers apply HPC to tackle their geospatial problems. Based on this focus, the book identifies the opportunities and challenges revolving around geospatial applications of HPC. Readers are introduced to the fundamentals of HPC, and will learn how HPC methods are applied in various specific areas of geospatial study. The book begins by discussing theoretical aspects and methodological uses of HPC within a geospatial context, including parallel algorithms, geospatial data handling, spatial analysis and modeling, and cartography and geovisualization. Then, specific domain applications of HPC are addressed in the contexts of earth science, land use and land cover change, urban studies, transportation studies, and social science. The book will be of interest to scientists and engineers who are interested in applying cutting-edge HPC technologies in their respective fields, as well as students and faculty engaged in geography, environmental science, social science, and computer science.

This book constitutes the refereed proceedings of the Second International Symposium on Computational Life Sciences, CompLife 2006, held in Cambridge, UK, in September 2006.The 25 revised full papers presented were carefully reviewed and selected from 56 initial submissions. The papers are organized in topical sections on genomics, data mining, molecular simulation, molecular informatics, systems biology, biological networks/metabolism, and computational neuroscience.

The aquatic coastal zone is one of the most challenging targets for environmental remote sensing. Properties such as bottom reflectance, spectrally diverse suspended sediments and phytoplankton communities, diverse benthic communities, and transient events that affect surface reflectance (coastal blooms, runoff, etc.) all combine to produce an optical complexity not seen in terrestrial or open ocean systems. Despite this complexity, remote sensing is proving to be an invaluable tool for "Case 2" waters. This book presents recent advances in coastal remote sensing with an emphasis on applied science and management. Case studies of the operational use of remote sensing in ecosystem studies, monitoring, and interfacing remote sensing/science/management are presented. Spectral signatures of phytoplankton and suspended sediments are discussed in detail with accompanying discussion of why blue water (Case 1) algorithms cannot be applied to Case 2 waters. Audience This book is targeted for scientists and managers interested in using remote sensing in the study or management of aquatic coastal environments. With only limited discussion of optics and theory presented in the book, such researchers might benefit from the detailed presentations of aquatic spectral signatures, and to operational management issues. While not specifically written for remote sensing scientists, it will prove to be a useful reference for this community for the current status of aquatic coastal remote sensing.

Sediment dynamics in fluvial systems is of great ecological, economic and human-health-related significance worldwide. Appropriate management strategies are therefore needed to limit maintenance costs as well as minimize potential hazards to the aquatic and adjacent environments. Human intervention, ranging from nutrient/pollutant release to

physical modifications, has a large impact on sediment quantity and quality and thus on river morphology as well as on ecological functioning. Truly understanding sediment dynamics requires as a consequence a multidisciplinary approach.River Sedimentation contains the peer-reviewed scientific contributions presented at the 13th International Symposium on River Sedimentation (ISRS 2016, Stuttgart, Germany, 19-22 September 2016), and includes recent accomplishments in theoretical developments, numerical modelling, experimental laboratory work, field investigations and monitoring as well as management methodologies.