New Trends in Image Analysis and Processing -- ICIAP 2015 Workshops

Computer science provides a powerful tool that was virtually unknown three generations ago. Some of the classical fields of knowledge are geodesy (surveying), cartography, and geography. Electronics have revolutionized geodetic methods. Cartography has faced the dominance of the computer that results in simplified cartographic products. All three fields make use of basic components such as the Internet and databases. The Springer Handbook of Geographic Information is organized in three parts, Basics, Geographic Information and Applications. Some parts of the basics belong to the larger field of computer science. However, the reader gets a comprehensive view on geographic information because the topics selected from computer science have a close relation to geographic information. The Springer Handbook of Geographic Information is written for scientists at universities and industry as well as advanced and PhD students.

Manual of Photogrammetry


Future U.S. Workforce for Geospatial Intelligence

Twenty-five papers from the Institute for Mediterranean Studies in Crete provide a best practice guide for the use of geophysical, geoaarchaeological, geochemical and surveying techniques to study ancient landscapes.

The SAGE Handbook of Remote Sensing

This book constitutes the proceedings of the 41st DAGM German Conference on Pattern Recognition, DAGM GCPR 2019, held in Dortmund, Germany, in September 2019. The 43 revised full papers presented were carefully reviewed and selected from 91 submissions. The German Conference on Pattern Recognition is the annual symposium of the German Association for Pattern Recognition (DAGM). It is the national venue for recent advances in image processing, pattern recognition, and computer vision and it follows the long tradition of the DAGM conference series.

Encyclopedia of Geography

Published on the occasion of the XXlst Congress of the International Society for Photogrammetry and Remote Sensing (ISPRS) in Beijing, China in 2008, Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences; 2008 ISPRS Congress Book is a compilation of 34 contributions from 62 researchers active within the ISPRS. The book covers

Springer Handbook of Geographic Information

Scientific techniques developed in materials science offer invaluable information to archaeology, art history, and conservation.
A rapidly growing number of innovative methods, as well as many established techniques, are constantly being improved and optimised for the analysis of cultural heritage materials. The result is that on the one hand more complex problems and questions can be confronted, but on the other hand the required level of technical competence is widening the existing cultural gap between scientists and end users, such as archaeologists, museum curators, art historians, and many managers of cultural heritage who have a purely humanistic background. The book is intended as an entry-level introduction to the methods and rationales of scientific investigation of cultural heritage materials, with emphasis placed on the analytical strategies, modes of operation, and resulting information rather than on technicalities. The extensive and updated reference list should be a useful starting point for further reading. Students and researchers from the humanities approaching scientific investigations should find it useful, as well as scientists applying familiar techniques and methods to unfamiliar problems related to cultural heritage.

**Pattern Recognition**

This textbook deals with the basics and methods of photogrammetry and laser scanning which are used to determine the form and location of objects, with measurements provided by sensors placed in air planes as well as on terrestrial platforms. Many examples and exercises with solutions are included. Photogrammetry, Laserscanning.

**3D Reconstruction from Multiple Images**

This text is designed to give students a strong grounding in the mathematical basis of photogrammetry while introducing them to related fields, such as remote sensing and digital image processing. Suitable for undergraduate photogrammetry courses typically aimed at junior and senior students, and for graduate-level courses at the Master's level. Excellent reference for those working in related fields.

**Advanced Concepts for Intelligent Vision Systems**

The definitive guide to photogrammetry--fully updated Thoroughly revised to cover the latest technological advances in the field, Elements of Photogrammetry with Applications in GIS, Fourth Edition, provides complete details on the foundational principles of photogrammetry as well as important advanced concepts. Significant changes in the instruments and procedures used in modern photogrammetry, including laser scanning, are discussed. Example problems clarify computational procedures and extensive photographs and diagrams illustrate the material presented in this comprehensive resource. Coverage includes: Principles of photography and imaging Cameras and other imaging devices Image measurements and refinements Object space coordinate systems Vertical photographs Stereoscopic viewing Stereoscopic parallax Stereoscopic plotting instruments Laser scanning systems Elementary methods of planimetric mapping for GIS Titled and oblique photographs Introduction to analytical photogrammetry Topographic mapping and spatial data collection Fundamental principles of digital image processing Photogrammetric applications in GIS Control for aerial photogrammetry Aerotriangulation Project planning Terrestrial and close-range photogrammetry

**Close-Range Photogrammetry and 3D Imaging**

Many smart phone users reap the benefits of location-based services. While tracking users' positions using their smart phone is an issue of concern for some, others who use Foursquare or rely on their Android GPS view location-based services as a necessity. Ubiquitous Positioning and Mobile Location-Based Services in Smart Phones explores new research in smart phones with an emphasis on positioning solutions in smart phones, smart phone-based navigation applications, mobile geographical information systems, and related standards.

**Remote Sensing and Image Interpretation**

A leading text for undergraduate- and graduate-level courses, this book introduces widely used forms of remote sensing imagery and their applications in plant sciences, hydrology, earth sciences, and land use analysis. The text provides comprehensive coverage of principal topics and serves as a framework for organizing the vast amount of remote sensing information available on the Web. Including case studies and review questions, the book's four sections and 21 chapters are carefully designed as independent units that instructors can select from as needed for their courses. Illustrations include 29 color plates and over 400 black-and-white figures. New to This Edition"Reflects significant technological and methodological advances."Chapter on aerial photography now emphasizes digital rather than analog systems."Updated discussions of accuracy assessment, multitemporal change detection, and digital preprocessing."Links to recommended online videos and tutorials.

**Introduction to Remote Sensing, Fifth Edition**

A thorough update to what is already one of the most comprehensive and rigorous texts in the field, the new edition incorporates the many advancements made in remote sensing over the past decade.

**Large-scale 3D Data Integration**
This book provides a detailed overview of the operational principles of modern mining geology, which are presented as a good mix of theory and practice, allowing use by a broad range of specialists, from students to lecturers and experienced geologists. The book includes comprehensive descriptions of mining geology techniques, including conventional methods and new approaches. The attributes presented in the book can be used as a reference and as a guide by mining industry specialists developing mining projects and for optimizing mining geology procedures. Applications of the methods are explained using case studies and are facilitated by the computer scripts added to the book as Electronic Supplementary Material.

Introduction to Unmanned Aircraft Systems

This book expands the current frame of reference of remote sensing and geographic information specialists to include an array of socio-economic and related planning issues. Using remotely sensed data, the project explores the efficacy and policy implications of new approaches toward analyzing data, integrates approaches from human geography and explores the utility of employing geo-technologies to further the politics of local growth and smart growth coalitions, as in green space programs.

The Encyclopedia of Middle East Wars: The United States in the Persian Gulf, Afghanistan, and Iraq Conflicts [5 volumes]

Photogrammetry is widely accepted as one of the best surveying methods to acquire tridimensional data without direct contact with the object, but its high operational costs in equipment and personnel somewhat limit its application in mapping. However, with the development of digital photogrammetry in the 1990’s, it was possible to introduce automated processes and reduce the personnel costs. In the following years, the cost of computer hardware, digital cameras and positioning sensors has been lowering, making photogrammetry more accessible to other engineering fields, such as architecture, archeology and health fields. This book shows the results of the work of researchers from different professional backgrounds, which evaluate the uses of photogrammetry, including issues of the data, processing, as well as the solutions developed for some surveying types that can be extended to many applications.

Geographic Information Systems: Concepts, Methodologies, Tools, and Applications

Developments in technologies have evolved in a much wider use of technology throughout science, government, and business; resulting in the expansion of geographic information systems. GIS is the academic study and practice of presenting geographical data through a system designed to capture, store, analyze, and manage geographic information. Geographic Information Systems: Concepts, Methodologies, Tools, and Applications is a collection of knowledge on the latest advancements and research of geographic information systems. This book aims to be useful for academics and practitioners involved in geographical data.

Remote Sensing

This new Handbook unites cartographic theory and praxis with the principles of cartographic design and their application. It offers a critical appraisal of the current state of the art, science, and technology of map-making in a convenient and well-illustrated guide that will appeal to an international and multi-disciplinary audience. No single-volume work in the field is comparable in terms of its accessibility, currency, and scope. The Routledge Handbook of Mapping and Cartography draws on the wealth of new scholarship and practice in this emerging field, from the latest conceptual developments in mapping and advances in map-making technology to reflections on the role of maps in society. It brings together 43 engaging chapters on a diverse range of topics, including the history of cartography, map use and user issues, cartographic design, remote sensing, volunteered geographic information (VGI), and map art. The title’s expert contributions are drawn from an international base of influential academics and leading practitioners, with a view to informing theoretical development and best practice. This new volume will provide the reader with an exceptionally wide-ranging introduction to mapping and cartography and aim to inspire further engagement within this dynamic and exciting field. The Routledge Handbook of Mapping and Cartography offers a unique reference point that will be of great interest and practical use to all map-makers and students of geographic information science, geography, cultural studies, and a range of related disciplines.

Introduction to Modern Photogrammetry

This book is a product of the joint efforts of interdisciplinary academic fields under the integrative framework of human geoscience. Human geoscience is a new genre of geoscience concerned with the natural phenomena that occur on the surface of the Earth and their relations with human activities. It therefore has connections with many fields of geoscience, namely, physical geography, geomorphology, geology, soil science, sedimentology, seismology, volcanology, meteorology, climatology, oceanography, and hydrology. It also has strong links to the humanities, social sciences, agricultural sciences, and engineering related to disaster prevention or mitigation. All these disciplines are important fields for understanding disasters and global environmental problems and for evaluating the associated risks comprehensively, then proposing mitigation strategies. The volume is designed for those who may not necessarily have a geoscience background but have broad scientific interest in understanding the causes, mechanisms, and consequences of geo-disasters and global environmental problems and wish to make the world more sustainable on that basis. The book consists of six parts: I. Introduction, II. Earth Surface Realms, III. Natural Resources and Society, IV. Natural Hazards and Society, V. Global Environmental Problems, and VI. Global Sustainability Programmes and Human Geoscience, which discusses the contribution...
of this field of science to a new comprehensive framework for global sustainability.

**Scientific Methods and Cultural Heritage**

This in-depth study of U.S. involvement in the modern Middle East carefully weighs the interplay of domestic, cultural, religious, diplomatic, international, and military events in one of the world's most troubled regions. Hundreds of alphabetically organized entries on wars, political events, religious and cultural issues, and diplomatic initiatives, as well as in-depth essays on background material, area and regional analyses, and biographical entries. An introduction by General Anthony Zinni, USMC (Ret), former commander in chief of U.S. Central Command. A chronologically arranged final volume comprised of primary and contemporary documents with individual introductions. Cross-references and books for further reading appended to each entry. A bibliography of over 450 books that are the latest in the field.

**Geodesy**

The Encyclopedia of Geographic Information Science covers the essence of this exciting, new, and expanding field in an easily understood but richly detailed style. In addition to contributions from some of the best recognized scholars in GIScience, this volume contains contributions from experts in GIScience's supporting disciplines who explore how their disciplinary perspectives are expanded within the context of GIScience: what changes when consideration of location is added, what complexities in analytical procedures are added when we consider objects in 2, 3 or even 4 dimensions, what can we gain by visualizing our analytical results on a map or 3D display?

**Encyclopedia of Geographic Information Science**

Remote sensing has undergone profound changes over the past two decades as GPS, GIS, and sensor advances have significantly expanded the user community and availability of images. New tools, such as automation, cloud-based services, drones, and artificial intelligence, continue to expand and enhance the discipline. Along with comprehensive coverage and clarity, Sabins and Ellis establish a solid foundation for the insightful use of remote sensing with an emphasis on principles and a focus on sensor technology and image acquisition. The Fourth Edition presents a valuable discussion of the growing and permeating use of technologies such as drones and manned aircraft imaging, DEMs, and lidar. The authors explain the scientific and societal impacts of remote sensing, review digital image processing and GIS, provide case histories from areas around the globe, and describe practical applications of remote sensing to the environment, renewable and nonrenewable resources, land use/land cover, natural hazards, and climate change. Remote Sensing Digital Database includes 27 examples of satellite and airborne imagery that can be used to jumpstart labs and class projects. The database includes descriptions, georeferenced images, DEMs, maps, and metadata. Users can display, process, and interpret images with opensource and commercial image processing and GIS software. Flexible, revealing, and instructive, the Digital Image Processing Lab Manual provides 12 step-by-step exercises on the following topics: an introduction to ENVI, Landsat multispectral processing, image processing, band ratios and principal components, georeferencing, DEMs and lidar, IHS and image sharpening, unsupervised classification, supervised classification, hyperspectral, and change detection and radar. Introductory and instructional videos describe and guide users on ways to access and utilize the Remote Sensing Digital Database and the Digital Image Processing Lab Manual. Answer Keys are available for instructors for questions in the text as well as the Digital Image Processing Lab Manual.

**Elements of Photogrammetry with Application in GIS, Fourth Edition**

This book constitutes the refereed proceedings of the 8th International Conference on Advanced Concepts for Intelligent Vision Systems, ACIVS 2006. The book presents 45 revised full papers and 65 revised poster papers. Topical sections include noise reduction and restoration, segmentation, motion estimation and tracking, video processing and coding, camera calibration, image registration and stereo matching, biometrics and security, medical imaging, image retrieval and image understanding, and more.

**Human Geoscience**

This book covers various aspects of spatial data modelling specifically regarding three-dimensional (3D) modelling and structuring. The realization of "true" 3D geoinformation spatial systems requires a high input, and the developmental process is taking place in various research centers and universities around the globe. The development of such systems and solutions, including the modelling theories are presented in this book.

**Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences: 2008 ISPRS Congress Book**

**Topographic Laser Ranging and Scanning**

Topographic Laser Ranging and Scanning, Second Edition, provides a comprehensive discussion of topographic LiDAR principles, systems, data acquisition, and data processing techniques. This edition presents an introduction and summary of
various LiDAR systems and their principles and addresses the operational principles of the different components and ranging methods of LiDAR systems. It discusses the subsequent geometric processing of LiDAR data, with particular attention to quality, accuracy, and meeting standards and addresses the theories and practices of information extraction from LiDAR data, including terrain surface generation, forest inventory, orthoimage generation, building reconstruction, and road extraction. Written by leaders in the field, this comprehensive compilation is a must-have reference book for senior undergraduate and graduate students majoring or working in diverse disciplines, such as geomatics, geodesy, natural resources, urban planning, computer vision, and computer graphics. It is also vital resource for researchers who are interested in developing new methods and need in-depth knowledge of laser scanning and data processing and other professionals may gain the same from the broad topics addressed in this book. New in the Second Edition: A comprehensive array of new laser ranging and scanning technologies. Developments in LiDAR data format and processing techniques. Regrouping of surface modeling, representations and reconstruction. Enhanced discussions on the principles and fundamentals beyond small-footprint pulsed laser systems and new application examples. Many new examples and illustrations.

Ubiquitous Positioning and Mobile Location-Based Services in Smart Phones

Remote Sensing and Image Interpretation, 7th Edition is designed to be primarily used in two ways: as a textbook in the introductory courses in remote sensing and image interpretation, and as a reference for the burgeoning number of practitioners who use geospatial information and analysis in their work. Because of the wide range of academic and professional settings in which this book might be used, we have made the discussion "discipline neutral." In short, anyone involved in geospatial data acquisition and analysis should find this book to be a valuable text and reference.

Sensors and Techniques for 3D Object Modeling in Underwater Environments

Camera Models and Fundamental Concepts Used in Geometric Computer Vision surveys the image acquisition methods used in computer vision and especially, of the vast number of camera models that have been proposed and investigated over the years, and points out similarities between different models.

Special Applications of Photogrammetry

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.

Remote Sensing

The Routledge Handbook of Mapping and Cartography

The issue discusses methods to extract 3-dimensional (3D) models from plain images. In particular, the 3D information is obtained from images for which the camera parameters are unknown. The principles underlying such uncalibrated structure-from-motion methods are outlined. First, a short review of 3D acquisition technologies puts such methods in a wider context, and highlights their important advantages. Then, the actual theory behind this line of research is given. The authors have tried to keep the text maximally self-contained, therefore also avoiding to rely on an extensive knowledge of the projective concepts that usually appear in texts about self-calibration 3D methods. Rather, mathematical explanations that are more amenable to intuition are given. The explanation of the theory includes the stratification of reconstructions obtained from image pairs as well as metric reconstruction on the basis of more than 2 images combined with some additional knowledge about the cameras used. Readers who want to obtain more practical information about how to implement such uncalibrated structure-from-motion pipelines may be interested in two more Foundations and Trends issues written by the same authors. Together with this issue they can be read as a single tutorial on the subject.

UAV Sensors for Environmental Monitoring

The fourth edition of this textbook has been thoroughly revised in order to reflect the central role which geodesy has achieved in the past ten years. It follows the principal directions of geodesy, providing the theoretical background as well as the principles of measurement and evaluation methods.

Camera Models and Fundamental Concepts Used in Geometric Computer Vision
Large-Scale 3D Data Integration: Challenges and Opportunities examines the fundamental aspects of 3D geo-information, focusing on the latest developments in 3D GIS (geographic information) and AEC (architecture, engineering, construction) systems. This book addresses policy makers, designers and engineers, and individuals that need to overco

Innovations in 3D Geo Information Systems

This textbook offers a statistical view on the geometry of multiple view analysis, required for camera calibration and orientation and for geometric scene reconstruction based on geometric image features. The authors have backgrounds in geodesy and also long experience with development and research in computer vision, and this is the first book to present a joint approach from the converging fields of photogrammetry and computer vision. Part I of the book provides an introduction to estimation theory, covering aspects such as Bayesian estimation, variance components, and sequential estimation, with a focus on the statistically sound diagnostics of estimation results essential in vision metrology. Part II provides tools for 2D and 3D geometric reasoning using projective geometry. This includes oriented projective geometry and tools for statistically optimal estimation and test of geometric entities and transformations and their relations, tools that are useful also in the context of uncertain reasoning in point clouds. Part III is devoted to modelling the geometry of single and multiple cameras, addressing calibration and orientation, including statistical evaluation and reconstruction of corresponding scene features and surfaces based on geometric image features. The authors provide algorithms for various geometric computation problems in vision metrology, together with mathematical justifications and statistical analysis, thus enabling thorough evaluations. The chapters are self-contained with numerous figures and exercises, and they are supported by an appendix that explains the basic mathematical notation and a detailed index. The book can serve as the basis for undergraduate and graduate courses in photogrammetry, computer vision, and computer graphics. It is also appropriate for researchers, engineers, and software developers in the photogrammetry and GIS industries, particularly those engaged with statistically based geometric computer vision methods.

Photogrammetry Aplied To Electron Micrography

This is the third edition of the well-known guide to close-range photogrammetry. It provides a thorough presentation of the methods, mathematics, systems and applications which comprise the subject of close-range photogrammetry, which uses accurate imaging techniques to analyse the three-dimensional shape of a wide range of manufactured and natural objects.

Best Practices of GeoInformatic Technologies for the Mapping of Archaeolscapes

We live in a changing world with multiple and evolving threats to national security, including terrorism, asymmetrical warfare (conflicts between agents with different military powers or tactics), and social unrest. Visually depicting and assessing these threats using imagery and other geographically-referenced information is the mission of the National Geospatial-Intelligence Agency (NGA). As the nature of the threat evolves, so do the tools, knowledge, and skills needed to respond. The challenge for NGA is to maintain a workforce that can deal with evolving threats to national security, ongoing scientific and technological advances, and changing skills and expectations of workers. Future U.S. Workforce for Geospatial Intelligence assesses the supply of expertise in 10 geospatial intelligence (GEOINT) fields, including 5 traditional areas (geodesy and geophysics, photogrammetry, remote sensing, cartographic science, and geographic information systems and geospatial analysis) and 5 emerging areas that could improve geospatial intelligence (GEOINT fusion, crowdsourcing, human geography, visual analytics, and forecasting). The report also identifies gaps in expertise relative to NGA's needs and suggests ways to ensure an adequate supply of geospatial intelligence expertise over the next 20 years.

Photogrammetry

This book is a printed edition of the Special Issue "UAV Sensors for Environmental Monitoring" that was published in Sensors

Photogrammetric Computer Vision

This book is a printed edition of the Special Issue "Sensors and Techniques for 3D Object Modeling in Underwater Environments" that was published in Sensors

Geo-Spatial Technologies in Urban Environments

Simply stated, geography studies the locations of things and the explanations that underlie spatial distributions. Profound forces at work throughout the world have made geographical knowledge increasingly important for understanding numerous human dilemmas and our capacities to address them. With more than 1,200 entries, the Encyclopedia of Geography reflects how the growth of geography has propelled a demand for intermediaries between the abstract language of academia and the ordinary language of everyday life. The six volumes of this encyclopedia encapsulate a diverse array of topics to offer a comprehensive and useful summary of the state of the discipline in the early 21st century. Key Features Gives a concise historical sketch of geography's long, rich, and fascinating history, including human geography, physical geography, and GIS Provides succinct summaries of trends such as globalization, environmental destruction, new geospatial technologies, and cyberspace Decomposes geography into the six broad subject areas: physical geography; human geography; nature and society; methods, models, and GIS; history of geography; and geographer biographies, geographic organizations, and important social movements Provides hundreds of color illustrations and images that lend depth and realism to the text
Includes a special map section Key Themes Physical Geography Human Geography Nature and Society Methods, Models, and GIS People, Organizations, and Movements History of Geography This encyclopedia strategically reflects the enormous diversity of the discipline, the multiple meanings of space itself, and the diverse views of geographers. It brings together the diversity of geographical knowledge, making it an invaluable resource for any academic library.

**Geo-information**

Geomatics, the handling and processing of information and data about the Earth, is one geoscience discipline that has seen major changes in the last decade, as mapping and observation systems become ever more sensitive and sophisticated. This book is a unique and in-depth survey of the field, which has a central role to play in tackling a host of environmental issues faced by society. Covering all three strands of geomatics - applications, information technology and surveying - the chapters cover the history and background of the subject, the technology employed both to collect and disseminate data, and the varied applications to which geomatics can be put, including urban planning, assessment of biodiversity, disaster management and land administration. Relevant professionals, as well as students in a variety of disciplines such as geography and surveying, will find this book required reading. This rapidly developing field uses increasingly complex and accurate systems. Today, technology enables us to capture geo-data in full 3D as well as to disseminate it via the Web at the speed of light. We are able to continuously image the world from space at resolutions of up to 50 cm. Airborne LiDAR (laser surveying) sensors can be combined with digital camera technology to produce geometrically correct images of the Earth's surface, while integrating these with large-scale topographic maps and terrestrial as well as aerial images to produce 3D cityscapes that computer users can explore from their desktops.

**Applied Mining Geology**

'A magnificent achievement. A who's who of contemporary remote sensing have produced an engaging, wide-ranging and scholarly review of the field in just one volume' - Professor Paul Curran, Vice-Chancellor, Bournemouth University Remote Sensing acquires and interprets small or large-scale data about the Earth from a distance. Using a wide range of spatial, spectral, temporal, and radiometric scales Remote Sensing is a large and diverse field for which this Handbook will be the key research reference. Organized in four key sections: Interactions of Electromagnetic Radiation with the Terrestrial Environment: chapters on Visible, Near-IR and Shortwave IR; Middle IR (3-5 micrometers); Thermal IR ; Microwave Digital sensors and Image Characteristics: chapters on Sensor Technology; Coarse Spatial Resolution Optical Sensors ; Medium Spatial Resolution Optical Sensors; Fine Spatial Resolution Optical Sensors; Video Imaging and Multispectral Digital Photography; Hyperspectral Sensors; Radar and Passive Microwave Sensors; Lidar Remote Sensing Analysis - Design and Implementation: chapters on Image Pre-Processing; Ground Data Collection; Integration with GIS; Quantitative Models in Remote Sensing; Validation and accuracy assessment; Remote Sensing Analysis - Applications: LITHOSPHERIC SCIENCES: chapters on Topography; Geology; Soils; PLANT SCIENCES: Vegetation; Agriculture; HYDROSPHERIC and CRYOSPHERIC SCIENCES: Hydrosphere: Fresh and Ocean Water; Cryosphere; GLOBAL CHANGE AND HUMAN ENVIRONMENTS: Earth Systems; Human Environments & Links to the Social Sciences; Real Time Monitoring Systems and Disaster Management; Land Cover Change Illustrated throughout, an essential resource for the analysis of remotely sensed data, the SAGE Handbook of Remote Sensing provides researchers with a definitive statement of the core concepts and methodologies in the discipline.

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