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Encyclopedia of Information Science and Technology, First Edition - Khosrow-Pour, D.B.A., Mehdi 2005-01-31
Comprehensive coverage of critical issues related to information science and technology.

Geospatial Services and Applications for the Internet - John T. Sample 2008-12-10
The use of geospatial technologies has become ubiquitous since the leading Internet vendors delivered a number of popular map websites. This book covers a wide spectrum of techniques, model methodologies and theories on development and applications of GIS relative to the internet. It includes coverage of business process services, and integration of GIS into global enterprise information systems and service architectures. The world's experts in this emerging field present examples and case studies for location-based services, coastal restoration, urban planning, battlefield planning, rehearsal environmental analysis and assessment.

GeoComputation - Robert J. Abrahart 2014-06-23
A revision of Openshaw and Abrahart's seminal work, GeoComputation, Second Edition retains influences of its originators while also providing updated, state-of-the-art information on changes in the computational environment. In keeping with the field's development, this new edition takes a broader view and provides comprehensive coverage across the

GIS - Michael F. Worboys 2004-05-11
GIS: A Computing Perspective, Second Edition, provides a full, up-to-date overview of GIS, both Geographic Information Systems and the study of Geographic Information Science. Analyzing the subject from a computing perspective, the second edition explores conceptual and formal models needed to understand spatial information, and examines the representations and data structures needed to support adequate system performance. This volume also covers the special-purpose interfaces and architectures required to interact with and share spatial information, and explains the importance of uncertainty and time. The material on GIS architectures and interfaces as well as spatiotemporal information systems is almost entirely new. The second edition contains substantial new information, and has been completely reformatted to improve accessibility. Changes include: A new chapter on spatial uncertainty Complete revisions of the bibliography, index, and supporting diagrams Supplemental material is offset at the top of the page, as are references and links for further study Definitions of new terms are in the margins of pages where they appear, with corresponding entries in the index

GIS - Michael F. Worboys 1995-10-30
This aims to make the computing principles underlying geographic databases understandable and accessible to current and potential users of such systems. It overviews database system philosophy; describes database concepts eg storage, retrieval, architecture, conceptual modelling, and database querying.It then focuses on the characteristics of GIS, spatial data and spatial databases, concluding with a discussion of current/future research trends.

Flexible Databases Supporting Imprecision and Uncertainty - Gloria Bordogna 2007-06-02
This volume offers the advice of selected expert contributors on the application of heterogeneous methods for managing uncertainty and imprecision in databases. It contains both survey chapters on classic topics such as "flexible querying in databases", and up to date information on "database models to represent imperfect data". Further, it includes specific contributions on uncertainty management in database integration, and in representing and querying semistructured and spatial data.

Spatial Data on the Web - Alberto Belussi 2007-08-15

This book focuses on the modeling and management of spatial data in distributed systems. The authors have structured the contributions from internationally renowned researchers into four parts. The book offers researchers an excellent overview of the state-of-the-art in modeling and management of spatial data in distributed environments, while it may also be the basis of specialized courses on Web-based geographical information systems.

A Changing World - Felix Kienast 2007-03-16
Modern landscape research uses a panoply of techniques to further our understanding of our changing world, including mathematics, statistics and advanced simulation techniques to combine empirical observations with known theories. This book identifies emerging fields and new challenges that are discussed within the framework of the 'driving forces' of Landscape Development. the book addresses all of the 'hot topics' in this important area of study and emphasizes major contemporary trends in these fields.

GIS and Public Health, Second Edition - Ellen K. Cromley 2011-10-28
Authoritative and comprehensive, this is the leading text and professional resource on using geographic information systems (GIS) to analyze and address public health problems. Basic GIS concepts and tools are explained, including ways to access and manage spatial databases. The book presents state-of-the-art methods for mapping and analyzing data on population, health events, risk factors, and health services, and for incorporating geographical knowledge into planning and policy. Numerous maps, diagrams, and real-world applications are featured. The companion Web page provides lab exercises with data that can be downloaded for individual or course use. New to This Edition*Incorporates major technological advances, such as Internet-based mapping systems and the rise of data from cell phones and other GPS-enabled devices.*Chapter on health disparities.*Expanded coverage of public participation GIS.*Companion Web page has all-new content.*Goes beyond the United States to encompass an international focus.

Applied Spatial Data Analysis with R - Roger S. Bivand 2013-06-21
Applied Spatial Data Analysis with R, second edition, is divided into two basic parts, the first presenting R packages, functions, classes and methods for handling spatial data. This part is of interest to users who need to access and visualise spatial data. Data import and export for many file formats for spatial data are covered in detail, as is the interface between R and the open source GRASS GIS and the handling of spatio-temporal data. The second part showcases more specialised kinds of spatial data analysis, including spatial point pattern analysis, interpolation and geostatistics, areal data analysis and disease mapping. The coverage of methods of spatial data analysis ranges from standard techniques to new developments, and the examples used are largely taken from the spatial statistics literature. All the examples can be run using R contributed packages available from the CRAN website, with code and additional data sets from the book's own website. Compared to the first edition, the second edition covers the more systematic approach towards handling spatial data in R, as well as a number of important and widely used CRAN packages that have appeared since the first edition. This book will be of interest to researchers who intend to use R to handle, visualise, and analyse spatial data. It will also be of interest to spatial data analysts who do not use R, but who are interested in practical aspects of implementing software for spatial data analysis. It is a suitable companion book for introductory spatial statistics courses and for applied methods courses in a wide range of subjects using spatial data, including human and physical geography, geographical information science and geoinformatics, the environmental sciences, ecology, public

health and disease control, economics, public administration and political science. The book has a website where complete code examples, data sets, and other support material may be found: http://www.asdar-book.org. The authors have taken part in writing and maintaining software for spatial data handling and analysis with R in concert since 2003.

Geographical Design - Stephen Hirtle 2011-03-08
With GIS technologies ranging from Google Maps and Google Earth to the use of smart phones and in-car navigation systems, spatial knowledge is often acquired and communicated through geographic information technologies. This monograph describes the interplay between spatial cognition research and use of spatial interfaces. It begins by reviewing what is known about how humans process spatial concepts and then moves on to discuss how interfaces can be improved to take advantage of those capabilities. Special attention is given to a variety of innovative geographical platforms that provide users with an intuitive understanding and support the further acquisition of spatial knowledge. The monograph concludes with a discussion of the number of outstanding issues, including the changing nature of maps as the primary spatial interface, concerns about privacy for spatial information, and a look at the future of user-centered spatial information systems. Table of Contents: Introduction / Spatial Cognition / Technologies / Cognitive Interfaces for Wayfinding / Open Issues / For More Information

Geographical Design - Stephen C Hirtle 2022-05-31
With spatial technologies ranging from mapping software to the use of location-based services, spatial knowledge is often acquired and communicated through geographic information technologies. This book describes the interplay between spatial cognition research and use of spatial interfaces. It begins by reviewing what is known about how humans process spatial concepts and then moves on to discuss how interfaces can be improved to take advantage of those capabilities by disambiguating cognitive aspects, conceptual aspects, computational aspects, and communications aspects. Special attention is given to a variety of innovative geographical platforms that provide users with an intuitive understanding and support the further acquisition of spatial knowledge. Alternatives to shortest-path algorithms to explore more scenic routes, as well as individual user differences that can emerge from previous experiences with virtual spaces, are also discussed. The book concludes with a discussion of the number of outstanding issues, including the changing nature of maps as the primary spatial interface, concerns about privacy for spatial information, and looks at the future of user-centered spatial information systems.

Urban and Regional Data Management - Alenka Krek 2009-06-02
Natural and human activities change the environment we are living in and consequently impact the quality of life. Analysing these dynamics leads to a better understanding of urban change and facilitates urban development. Research related to the management of urban data has a long tradition. Through the years a variety of challenging research questions has been investigated related to the collection, storage, use and visualisation of the data representing the urban phenomena in a computer-based environment. The Urban Data Management Symposium (UDMS) focuses on these issues since 1971. UDMS aims at providing a forum to discuss urban planning processes, exchange ideas, share information on available technology and demonstrate and promote successful information systems in local government. The focus is on urban, regional and rural issues. The UDMS 2009 annual addresses the following themes: 3D modelling, Spatial Data Infrastructures and databases, Risk and Disaster management, Environmental planning, analysis and e-government and Traffic and road monitoring. The book will be a useful source of information for urban data-related professionals, such as scholars, GIS engineers, geomatic professionals, photogrammetrists, land surveyors, mapping specialists, urban planners and researchers, as well as for postgraduate students and lecturers.

Manual of Digital Earth - Huadong Guo 2019-11-18
This open access book offers a summary of the development of Digital Earth over the past twenty years. By reviewing the initial vision of Digital Earth, the evolution of that vision, the relevant key technologies, and the role of Digital Earth in helping people respond to global challenges, this publication reveals how and why Digital Earth is becoming vital for acquiring, processing, analysing and mining the rapidly growing volume of global data sets about the Earth. The main aspects of Digital Earth covered here include: Digital Earth platforms, remote sensing and navigation satellites, processing and visualizing geospatial information, geospatial information infrastructures, big data and cloud computing, transformation and zooming, artificial intelligence, Internet of Things,

and social media. Moreover, the book covers in detail the multi-layered/multi-faceted roles of Digital Earth in response to sustainable development goals, climate changes, and mitigating disasters, the applications of Digital Earth (such as digital city and digital heritage), the citizen science in support of Digital Earth, the economic value of Digital Earth, and so on. This book also reviews the regional and national development of Digital Earth around the world, and discusses the role and effect of education and ethics. Lastly, it concludes with a summary of the challenges and forecasts the future trends of Digital Earth. By sharing case studies and a broad range of general and scientific insights into the science and technology of Digital Earth, this book offers an essential introduction for an ever-growing international audience.

Advanced Quantum Communications - Sandor Imre 2012-11-27
The book provides an overview of the most advanced quantum informational geometric techniques, which can help quantum communication theorists analyze quantum channels, such as security or additivity properties. Each section addresses an area of major research of quantum information theory and quantum communication networks. The authors present the fundamental theoretical results of quantum information theory, while also presenting the details of advanced quantum ccommunication protocols with clear mathematical and information theoretical background. This book bridges the gap between quantum physics, quantum information theory, and practical engineering.

GIS Fundamentals - Stephen Wise 2018-09-03
With GIS technology increasingly available to a wider audience on devices from apps on smartphones to satnavs in cars, many people routinely use spatial data in a way which used to be the preserve of GIS specialists. However spatial data is stored and analyzed on a computer still tends to be described in academic texts and articles which require specialist knowledge or some training in computer science. Developed to introduce computer science literature to geography students, GIS Fundamentals, Second Edition provides an accessible examination of the underlying principles for anyone with no formal training in computer science. See What's New in the Second Edition: Coverage of the use of spatial data on the Internet Chapters on databases and on searching large databases for spatial queries Improved coverage on route-finding Improved coverage of heuristic approaches to solving real-world spatial problems International standards for spatial data The book begins with a brief but detailed introduction to how computers work and how they are programmed, giving anyone with no previous computer science background a foundation to understand the remainder of the book. As with all parts of the book there are also suggestions for further sources of reading. The book then describes the ways in which vector and raster data can be stored and how algorithms are designed to perform fundamental operations such as detecting where lines intersect. From these simple beginnings the book moves into the more complex structures used for handling surfaces and networks and contains a detailed account of what it takes to determine the shortest route between two places on a network. The final sections of the book review problems, such as the "Travelling Salesman" problem, which are so complex that it is not known whether an optimum solution exists. Using clear, concise language, but without sacrificing technical rigour, the book gives readers an understanding of what it takes to produce systems which allow them to find out where to make their next purchase and how to drive to the right place to collect it.

Finite and Algorithmic Model Theory - Javier Esparza 2011-03-10
Surveys of current research in logical aspects of computer science that apply finite and infinite model-theoretic methods.

Conceptual Modeling for Traditional and Spatio-Temporal Applications - Christine Parent 2006-09-02
From environmental management to land planning and geo-marketing, the number of application domains that may greatly benefit from using data enriched with spatio-temporal features is expanding very rapidly. This book shows that a conceptual design approach for spatio-temporal databases is both feasible and easy to apprehend. While providing a firm basis through extensive discussion of traditional data modeling concepts, the major focus of the book is on modeling spatial and temporal information.

Mobility, Data Mining and Privacy - Fosca Giannotti 2008-01-12
Mobile communications and ubiquitous computing generate large volumes of data. Mining this data can produce useful knowledge, yet individual privacy is at risk. This book investigates the various scientific and technological issues of mobility data, open problems, and roadmap. The editors manage a research project called GeoPKDD, Geographic

Privacy-Aware Knowledge Discovery and Delivery, and this book relates their findings in 13 chapters covering all related subjects.

Spatial Databases - Ph Rigaux 2002
The authors explore and explain current techniques for handling the specialised data that describes geographical phenomena in a study that will be of great value to computer scientists and geographers working with spatial databases.

Senior Leadership Roundtable on Military and Defence Aspects of Border Security in South East Europe - I.V. Lochard 2019-02-08
The region of South East Europe (SEE), which is home to both NATO and Partnership for Peace (PfP) countries, serves as an important corridor between Europe and the Middle East, North Africa, and the Caucasus. In recent years, however, SEE has also experienced high levels of cross-border, military and defense-related challenges in the form of migration, smuggling, terrorism, and cyber threats. Furthermore, the use of the new information environment (IE) to further extremism in SEE and elsewhere in NATO and PfP countries has had far-reaching command and control (C2) implications for the Alliance. A collaborative interdisciplinary, international and regional approach is clearly needed to adequately assess and address these hybrid threats. This book presents papers delivered at the NATO Science for Peace and Security (SPS) event: "Senior Leadership Roundtable on Military and Defense Aspects of Border Security in South East Europe", held in Berovo, the Former Yugoslav Republic of Macedonia* from 23-30 September 2017. The aim of this special SPS grant was to maximize opportunities for extensive dialogue and collaboration between senior regional members, and the almost 70 distinguished academic and legal experts, as well as current or former senior-level practitioners from various governments, NATO bodies, and international organization that participated. It was the first SPS event of its kind in SEE as well as the first NATO SPS grant to be co-executed by the U.S. Department of Defense via the U.S. National Defense University. Other co-organizers were the C4I and Cyber Center of Excellence at George Mason University and PfP partner institution, the General Mihailo Apostolski Military Academy – Skopje, Associate Member of the University of Goce Delčev – Stip. The book is divided into five parts: global trends, defining the problem, policy and academic solutions, national and regional case studies, and technological solutions. It will prove an invaluable source of reference for all those with an interest in the SEE region as well as cross-border hybrid threats, in general. * Turkey recognizes the Republic of Macedonia with its constitutional name.

Geospatial Analysis and Modelling of Urban Structure and Dynamics - Bin Jiang 2010-06-16
A Coming of Age: Geospatial Analysis and Modelling in the Early Twenty First Century Forty years ago when spatial analysis first emerged as a distinct theme within geography's quantitative revolution, the focus was largely on consistent methods for measuring spatial correlation. The concept of spatial au- correlation took pride of place, mirroring concerns in time-series analysis about similar kinds of dependence known to distort the standard probability theory used to derive appropriate statistics. Early applications of spatial correlation tended to reflect geographical patterns expressed as points. The perspective taken on such analytical thinking was founded on induction, the search for pattern in data with a view to suggesting appropriate hypotheses which could subsequently be tested. In parallel but using very different techniques came the development of a more deductive style of analysis based on modelling and thence simulation. Here the focus was on translating prior theory into forms for generating testable predictions whose outcomes could be compared with observations about some system or phenomenon of interest. In the intervening years, spatial analysis has broadened to embrace both inductive and deductive approaches, often combining both in different mixes for the variety of problems to which it is now applied.

Spatial Information Theory - Anthony G. Cohn 2005-09
This book constitutes the refereed proceedings of the International Conference on Spatial Information Theory, COSIT 2005, held in Elliottville, NY, USA in September 2005. The 30 revised full papers presented were carefully reviewed and selected from 82 submissions. The papers are organized in topical sections on vagueness, uncertainty, and gradation; paths and routes; ontologies and semantics; ontologies and spatial relations; spatial reasoning: cognitive maps and spatial reasoning; time, change, and dynamics; landmarks and navigation; geographic information, and spatial behaviour.

GIS and Geocomputation for Water Resource Science and Engineering - Barnali Dixon 2016-02-08
GIS and Geocomputation for Water Resource Science and Engineering

not only provides a comprehensive introduction to the fundamentals of geographic information systems but also demonstrates how GIS and mathematical models can be integrated to develop spatial decision support systems to support water resources planning, management and engineering. The book uses a hands-on active learning approach to introduce fundamental concepts and numerous case-studies are provided to reinforce learning and demonstrate practical aspects. The benefits and challenges of using GIS in environmental and water resources fields are clearly tackled in this book, demonstrating how these technologies can be used to harness increasingly available digital data to develop spatially-oriented sustainable solutions. In addition to providing a strong grounding on fundamentals, the book also demonstrates how GIS can be combined with traditional physics-based and statistical models as well as information-theoretic tools like neural networks and fuzzy set theory.

Encyclopedia of Geographic Information Science - Karen Kemp 2008
Geographic information science (GIScience) is an emerging field that combines aspects of many different disciplines. Spatial literacy is rapidly becoming recognized as a new, essential pier of basic education, alongside grammatical, logical and mathematical literacy. By incorporating location as an essential but often overlooked characteristic of what we seek to understand in the natural and built environment, geographic information science (GIScience) and systems (GISystems) provide the conceptual foundation and tools to explore this new frontier. 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 GIS' 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? Key Features Brings together GIScience literature that is spread widely across the academic spectrum Offers details about the key foundations of GIScience, no matter what their disciplinary origins Elucidates vocabulary that is an amalgam of all of these fields Key Themes Conceptual Foundations Cartography and Visualization Design Aspects Data Manipulation Data Modeling Geocomputation Geospatial Data Societal Issues Spatial Analysis Organizational and Institutional Aspects The Encyclopedia of Geographic Information Science is an important resource for academic and corporate libraries.

Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences: 2008 ISPRS Congress Book - Zhilin Li 2008-07-01
Published on the occasion of the XXIst Congress of the International Society for Photogrammetry and Remote Sensing (ISPRS) in Beiijng, 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

Successful Response Starts with a Map - National Research Council 2007-01-19
In the past few years the United States has experienced a series of disasters, such as Hurricane Katrina in 2005, which have severely taxed and in many cases overwhelmed responding agencies. In all aspects of emergency management, geospatial data and tools have the potential to help save lives, limit damage, and reduce the costs of dealing with emergencies. Great strides have been made in the past four decades in the development of geospatial data and tools that describe locations of objects on the Earth's surface and make it possible for anyone with access to the Internet to witness the magnitude of a disaster. However, the effectiveness of any technology is as much about the human systems in which it is embedded as about the technology itself. Successful Response Starts with a Map assesses the status of the use of geospatial data, tools, and infrastructure in disaster management, and recommends ways to increase and improve their use. This book explores emergency planning and response; how geospatial data and tools are currently being used in this field; the current policies that govern their use; various issues related to data accessibility and security; training; and funding. Successful Response Starts with a Map recommends significant investments be made in training of personnel, coordination among agencies, sharing of data and tools, planning and preparedness, and the tools themselves.

Data Warehouse Systems - Alejandro Vaisman 2022-08-16
With this textbook, Vaisman and Zimányi deliver excellent coverage of data warehousing and business intelligence technologies ranging from the most basic principles to recent findings and applications. To this end, their work is structured into three parts. Part I describes "Fundamental Concepts" including conceptual and logical data warehouse design, as well as querying using MDX, DAX and SQL/OLAP. This part also covers data analytics using Power BI and Analysis Services. Part II details "Implementation and Deployment," including physical design, ETL and data warehouse design methodologies. Part III covers "Advanced Topics" and it is almost completely new in this second edition. This part includes chapters with an in-depth coverage of temporal, spatial, and mobility data warehousing. Graph data warehouses are also covered in detail using Neo4j. The last chapter extensively studies big data management and the usage of Hadoop, Spark, distributed, in-memory, columnar, NoSQL and NewSQL database systems, and data lakes in the context of analytical data processing. As a key characteristic of the book, most of the topics are presented and illustrated using application tools. Specifically, a case study based on the well-known Northwind database illustrates how the concepts presented in the book can be implemented using Microsoft Analysis Services and Power BI. All chapters have been revised and updated to the latest versions of the software tools used. KPIs and Dashboards are now also developed using DAX and Power BI, and the chapter on ETL has been expanded with the implementation of ETL processes in PostgreSQL. Review questions and exercises complement each chapter to support comprehensive student learning. Supplemental material to assist instructors using this book as a course text is available online and includes electronic versions of the figures, solutions to all exercises, and a set of slides accompanying each chapter. Overall, students, practitioners and researchers alike will find this book the most comprehensive reference work on data warehouses, with key topics described in a clear and educational style. "I can only invite you to dive into the contents of the book, feeling certain that once you have completed its reading (or maybe, targeted parts of it), you will join me in expressing our gratitude to Alejandro and Esteban, for providing such a comprehensive textbook for the field of data warehousing in the first place, and for keeping it up to date with the recent developments, in this current second edition." From the foreword by Panos Vassiliadis, University of Ioannina, Greece.

Interacting with Geospatial Technologies - Mordechai (Muki) Haklay 2015-10-26
This book provides an introduction to HCI and usability aspects ofGeographical Information Systems and Science. Its aim is tointroduce the principles of Human-Computer Interaction (HCI); todiscuss the special usability aspects of GIS which designers anddevelopers need to take into account when developing such systems;and to offer a set of tried and tested frameworks, matrices andtechniques that can be used within GIS projects. Geographical Information Systems and other applications ofcomputerised mapping have gained popularity in recent years. Today,computer-based maps are common on the World Wide Web, mobilephones, satellite navigation systems and in various desktopcomputing packages. The more sophisticated packages that allow themanipulation and analysis of geographical information are used inlocation decisions of new businesses, for public service deliveryfor planning decisions by local and central government. Many moreapplications exist and some estimate the number of people acrossthe world that are using GIS in their daily work at severalmillions. However, many applications of GIS are hard to learn andto master. This is understandable, as until quite recently, themain focus of software vendors in the area of GIS was on thedelivery of basic functionality and development of methods topresent and manipulate geographical information using the availablecomputing resources. As a result, little attention was paid tousability aspects of GIS. This is evident in many public andprivate systems where the terminology, conceptual design andstructure are all centred around the engineering of GIS and not onthe needs and concepts that are familiar to the user. This book covers a range of topics from the cognitive models ofgeographical representation, to interface design. It will providethe reader with frameworks and techniques that can be used anddescription of case studies in which these techniques have beenused for computer mapping application.

Decentralized Spatial Computing - Matt Duckham 2014-08-09
Computing increasingly happens somewhere, with that geographic location important to the computational process itself. Many new and evolving spatial technologies, such as geosensor networks and smartphones, embody this trend. Conventional approaches to spatial computing are centralized, and do not account for the inherently decentralized nature of "computing somewhere": the limited, local knowledge of individual system components, and the interaction between those components at different locations. On the other hand, despite being an established topic in distributed systems, decentralized computing is not concerned with geographical constraints to the generation and movement of information. In this context, of (centralized) spatial computing and decentralized (non-spatial) computing, the key question becomes: "What makes decentralized spatial computing special?" In Part I of the book the author covers the foundational concepts, structures, and design techniques for decentralized computing with spatial and spatiotemporal information. In Part II he applies those concepts and techniques to the development of algorithms for decentralized spatial computing, stepping through a suite of increasingly sophisticated algorithms: from algorithms with minimal spatial information about their neighborhoods; to algorithms with access to more detailed spatial information, such as direction, distance, or coordinate location; to truly spatiotemporal algorithms that monitor environments that are dynamic, even using networks that are mobile or volatile. Finally, in Part III the author shows how decentralized spatial and spatiotemporal algorithms designed using the techniques explored in Part II can be simulated and tested. In particular, he investigates empirically the important properties of a decentralized spatial algorithm: its computational efficiency and its robustness to unavoidable uncertainty. Part III concludes with a survey of the opportunities for connecting decentralized spatial computing to ongoing research and emerging hot topics in related fields, such as biologically inspired computing, geovisualization, and stream computing. The book is written for students and researchers of computer science and geographic information science. Throughout the book the author's style is characterized by a focus on the broader message, explaining the process of decentralized spatial algorithm design rather than the technical details. Each chapter ends with review questions designed to test the reader's understanding of the material and to point to further work or research. The book includes short appendices on discrete mathematics and SQL. Simulation models written in NetLogo and associated source code for all the algorithms presented in the book can be found on the author's accompanying website.

Next Generation Geospatial Information - Peggy Agouris 2005-08-11
With the turn of the century our ability to collect and store geospatial information has increased considerably. This has resulted in ever-increasing amounts of heterogeneous geospatial data, an issue that poses new challenges and opportunities. As these rich sources of data are made available, users rely, now more than ever, on the geospatial data

Foundations of Geographic Information Science - Matt Duckham 2003-01-30
As the use of geographical information systems develops apace, a significant strand of research activity is being directed to the fundamental nature of geographic information. This volume contains a collection of essays and discussions on this theme. What is geographic information? What fundamental principles are associated with it? How can

Modern Accelerator Technologies for Geographic Information Science - Xuan Shi 2013-10-27
This book explores the impact of augmenting novel architectural designs with hardware-based application accelerators. The text covers comprehensive aspects of the applications in Geographic Information Science, remote sensing and deploying Modern Accelerator Technologies (MAT) for geospatial simulations and spatiotemporal analytics. MAT in GIS applications, MAT in remotely sensed data processing and analysis, heterogeneous processors, many-core and highly multi-threaded processors and general purpose processors are also presented. This book includes case studies and closes with a chapter on future trends. Modern Accelerator Technologies for GIS is a reference book for practitioners and researchers working in geographical information systems and related fields. Advanced-level students in geography, computational science, computer science and engineering will also find this book useful.

A Primer of GIS, Second Edition - Francis Harvey 2015-10-28
This accessible text prepares students to understand and work with geographic information systems (GIS), offering a detailed introduction to essential theories, concepts, and skills. The book is organized in four modular parts that can be used in any sequence in entry-level and more specialized courses. Basic cartographic principles are integrated with up-to-date discussions of GIS technologies and applications. Coverage includes everything from what geographic information is to its many uses

and societal implications. Practical examples and exercises invite readers to explore the choices involved in producing reliable maps and other forms of geographic information. Illustrations include 170 figures (with 15 in color). The companion website provides links to Web resources for each chapter, plus downloadable PowerPoint slides of most of the figures. New to This Edition *Chapter on online mapping and Big Data. *New and updated discussions of remote sensing, vector and raster data models, location privacy, uses of geocoding, and other timely topics. *Chapter on the many uses of GIS, such as in market analyses, emergency responding, and tracking of epidemics. *Section overviews and an end-of-book glossary. Pedagogical Features *Modules and individual chapters can be used sequentially or in any order. *End-of-chapter review questions with answers, exercises, and extended exercises for applying theories and concepts. *"In-Depth" sidebars offering a closer look at key concepts and applications. *End-of-chapter links to relevant Web resources.

Handbook of Behavioral and Cognitive Geography - Daniel R. Montello 2018
This comprehensive Handbook summarizes existing work and presents new concepts and empirical results from leading scholars in the multidisciplinary field of behavioral and cognitive geography, the study of the human mind, and activity in and concerning space, place, and environment. It provides the broadest and most inclusive coverage of the field so far, including work relevant to human geography, cartography, and geographic information science.

Handbook of Discrete and Computational Geometry, Second Edition - Csaba D. Toth 2004-04-13
While high-quality books and journals in this field continue to proliferate, none has yet come close to matching the Handbook of Discrete and Computational Geometry, which in its first edition, quickly became the definitive reference work in its field. But with the rapid growth of the discipline and the many advances made over the past seven years, it's time to bring this standard-setting reference up to date. Editors Jacob E. Goodman and Joseph O'Rourke reassembled their stellar panel of contributors, added manymore, and together thoroughly revised their work to make the most important results and methods, both classic and cutting-edge, accessible in one convenient volume. Now over more then 1500 pages, the Handbook of Discrete and Computational Geometry, Second Edition once again provides unparalleled, authoritative coverage of theory, methods, and applications. Highlights of the Second Edition: Thirteen new chapters: Five on applications and others on collision detection, nearest neighbors in high-dimensional spaces, curve and surface reconstruction, embeddings of finite metric spaces, polygonal linkages, the discrepancy method, and geometric graph theory Thorough revisions of all remaining chapters Extended coverage of computational geometry software, now comprising two chapters: one on the LEDA and CGAL libraries, the other on additional software Two indices: An Index of Defined Terms and an Index of Cited Authors Greatly expanded bibliographies

Progress in Spatial Data Handling - Andreas Riedl 2006-09-01
Since the first symposium in 1984 the International Symposia on Spatial Data Handling (SDH) has become a major resource for recent advances in GIS research. The International Symposium on Spatial Data Handling is regarded as a premier international research forum for GIS. All papers are fully reviewed by an international program committee composed of experts in the field.

CAD and GIS Integration - Hassan A. Karimi 2009-12-17
When used together effectively, computer-aided design (CAD) and geospatial information systems (GIS) have a solid track record for streamlining decision making and reducing inefficiencies in the design, planning, and execution of critical operations and projects. And a growing number of engineering tasks in numerous fields—including design, architecture, construction, and asset management—now require the knowledge of many interrelated yet disconnected CAD/GIS tools and task-specific software. A multidisciplinary resource delineating existing and emerging solutions for CAD/GIS integration issues, CAD and GIS Integration provides a clear understanding of the state of the art in this area of growing importance. It brings together in-depth descriptions of existing and emerging techniques, methodologies, and technologies to examine approaches that enable data and operations interoperability between CAD/GIS. Starting with a review of fundamental concepts and theories, the book: Addresses contemporary issues and challenges Provides a collection of helpful methodologies, techniques, and technologies for integrating CAD and GIS Presents balanced coverage of CAD and GIS technologies and applications Highlights emerging trends in CAD/GIS integration Explores the state-of-the-art in the application of CAD and GIS technologies, data, and operations for decision making From early developments to current trends and future directions, this concise resource allows you to get up to speed quickly on what it takes to get the most of these two dynamic technologies. Numerous example applications of effective CAD/GIS integration provide the understanding needed to improve designs, make better decisions, and reduce or even eliminate costly errors in your next project.

Learning Culture and Language through ICTs: Methods for Enhanced Instruction - Chang, Maiga 2009-05-31
"This book offers readers an authoritative reference to the current progress of Chinese language and cultural e-learning"--Provided by publisher.

Advanced Data Warehouse Design - Elzbieta Malinowski 2008-01-22
This exceptional work provides readers with an introduction to the state-of-the-art research on data warehouse design, with many references to more detailed sources. It offers a clear and a concise presentation of the major concepts and results in the subject area. Malinowski and Zimányi explain conventional data warehouse design in detail, and additionally address two innovative domains recently introduced to extend the capabilities of data warehouse systems: namely, the management of spatial and temporal information.