Openstreetmap In Giscience Experiences Research And Applications Lecture Notes In Geoinformation And Cartography

Maps are a fundamental resource in a diverse array of applications ranging from everyday activities, such as route planning through the legal demarcation of space to scientific studies, such as those seeking to understand biodiversity and inform the design of nature reserves for species conservation. For a map to have value, it should provide an accurate and timely representation of the phenomenon depicted and this can be a challenge in a dynamic world. Fortunately, mapping activities have benefitted greatly from recent advances in geoinformation technologies. Satellite remote sensing, for example, now offers unparalleled data acquisition and authoritative mapping agencies have developed systems for the routine production of maps in accordance with strict standards. Until recently, much mapping activity was in the exclusive realm of authoritative agencies but technological development has also allowed the rise of the amateur mapping community. The proliferation of inexpensive and highly mobile and location aware devices together with Web 2.0 technology have fostered the emergence of the citizen as a source of data. Mapping presently benefits from vast amounts of spatial data as well as people able to provide observations of geographic phenomena, which can inform map production, revision and evaluation. The great potential of these developments is, however, often limited by concerns. The latter span issues from the nature of the citizens through the

way data are collected and shared to the quality and trustworthiness of the data. This book reports on some of the key issues connected with the use of citizen sensors in mapping. It arises from a European Co-operation in Science and Technology (COST) Action, which explored issues linked to topics ranging from citizen motivation, data acquisition, data quality and the use of citizen derived data in the production of maps that rival, and sometimes surpass, maps arising from authoritative agencies.

This book introduces the usage, functionality, and application of data in geographic information systems (GIS) for geo-spatial analysis. It offers knowledge on GIS tools and techniques and explains how they can be applied in real-world project to architects and planners in the Indian and the Greater South Asian context using open-source software. The volume explains concepts on planning and architectural tasks, their data, methods and requirements followed, and includes GIS-related exercises on the same tasks. It takes the reader through the concepts of geo-spatial analysis and its referencing system while quoting examples from India. Further, the content of the book will help the planners involved in preparing GIS-based master planning for cities under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) scheme (see Glossary for details). A practical guidebook providing a step-by-step guide to learn open source GIS, this book will be useful for students, scholars and professionals from the field of architecture and planning, geography and other spatial sciences, instructors of GIS course on planning and architecture, urban and regional planners, transport planners, urban design, landscape architects, environmental planners, departments of town and country planning, and development authorities. It will also be useful for anyone interested in the geospatial analysis.

Environmental information and systems play a major role in environmental decision making. As such, it is vital to understand the impact that they have on different aspects of sustainable environmental management, as well as to understand the opportunism they might present for further improvement. Environmental Information Systems: Concepts, Methodologies, Tools, and Applications is an innovative reference source containing the latest research on the use of information systems to track and organize environmental data for use in an overall environmental management system. Highlighting a range of topics such as environmental analysis, remote sensing, and geographic information science, this multi-volume book is designed for engineers, data scientists, practitioners, academicians, and researchers interested in all aspects of environmental information systems.

This book constitutes the proceedings of the Third EAI International Conference on Intelligent Transport Systems, INTSYS 2019, which was held in Braga, Portugal, in December 2019. The 23 revised full papers were selected from 35 submissions and are organized in four thematic sessions on modelling, optimization, tracking and prediction, visualization and sensing.

The book features contributions that report original research in the theoretical, technological, and social aspects of geoinformation methods, as applied to supporting citizen science. Specifically, the book focuses on the technological aspects of the field and their application toward the recruitment of volunteers and the collection, management, and analysis of geotagged information to support volunteer involvement in scientific projects. Internationally renowned research groups share research in three areas: First, the key methods of geoinformatics within citizen science initiatives to support scientists in discovering new knowledge in specific application domains or in performing relevant activities, such as reliable

geodata filtering, management, analysis, synthesis, sharing, and visualization; second, the critical aspects of citizen science initiatives that call for emerging or novel approaches of geoinformatics to acquire and handle geoinformation; and third, novel geoinformatics research that could serve in support of citizen science.

This book includes a selection of articles from The 2019 World Conference on Information Systems and Technologies (WorldCIST'19), held from April 16 to 19, at La Toja, Spain. WorldCIST is a global forum for researchers and practitioners to present and discuss recent results and innovations, current trends, professional experiences and challenges in modern information systems and technologies research, together with their technological development and applications. The book covers a number of topics, including A) Information and Knowledge Management; B) Organizational Models and Information Systems; C) Software and Systems Modeling; D) Software Systems, Architectures, Applications and Tools; E) Multimedia Systems and Applications; F) Computer Networks, Mobility and Pervasive Systems; G) Intelligent and Decision Support Systems; H) Big Data Analytics and Applications; I) Human–Computer Interaction; J) Ethics, Computers & Security; K) Health Informatics; L) Information Technologies in Education; M) Information Technologies in Radiocommunications; and N) Technologies for Biomedical Applications.

This is a hands-on book about ArcGIS that you work with as much as read. By the end, using Learn ArcGIS lessons, you'll be able to say you made a story map, conducted geographic analysis, edited geographic data, worked in a 3D web scene, built a 3D model of Venice, and more.

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.

Der Text wendet sich an Nutzer von Geo-Informationssystemen, die kontinuierliche Oberflächen aus unregelmäßig verteilten Datenpunkten oder aus Polygonen mit einem aufsummierten Datenwert erzeugen wollen. Die überwiegende Mehrzahl der Anwender wird dafür die gängigen GIS-Pakete nutzen. Das sind vor allem ArcGIS for Desktop mit Erweiterungen oder das Programm Surfer. In anderen Software-Paketen sind ebenfalls Optionen für die Interpolation und Visualisierung von Oberflächen enthalten, auch in Open-Source-Programmen. Viele der Optionen in der freien Software sind mit den hier diskutierten Verfahren identisch. Für die Experten, die noch selbst programmieren und sich damit die Werkzeuge anfertigen, die in den Standardprogrammen fehlen, stellt der Text einige Grundlagen und weiterführende Referenzen zur Verfügung. Für die Visualisierung von 21?2D-Oberflächen ist die Wahrscheinlichkeit geringer als bei den Interpolationsmethoden, dass sich Anwender ihre eigene Software schreiben werden. Das Angebot an freier und kommerzieller Computergraphik-Software ist sehr groß, zumindest für die gängigen Visualisierungsverfahren. Für manche Methoden, die etwas weiter von den häufig angewendeten Techniken entfernt sind, ist manchmal die Programmierung eigener Software notwendig, zumindest aber von Brücken für den Übergang zwischen unterschiedlichen Programmen

und Datenformaten.

Embracing a biological and evolutionary perspective to explain the human experience of place, Urban Experience and Design explores how cognitive science and biometric tools provide an evidence-based foundation for architecture and planning. Aiming to promote the creation of a healthier and happier public realm, this book describes how unconscious responses to stimuli, outside our conscious awareness, direct our experience of the built environment and govern human behavior in our surroundings. This collection contains 15 chapters, including contributions from researchers in the US, the UK, the Netherlands, France and Iran. Addressing topics such as the impact of eye-tracking analysis and seeing beauty and empathy within buildings, Urban Experience and Design encourages us to reframe our understanding of design, including the narrative of how modern architecture and planning came to be in the first place. This volume invites students, academics and scholars to see how cognitive science and biometric findings give us remarkable 21st-century metrics for evaluating and improving designs, even before they are built.

"Practical, accessible, careful and interesting, this...revised volume brings the subject up-to-date and explains, in bite sized chunks, the ?how?s? and ?why?s? of modern day geographical study...[It] brings together physical and human

approaches again in a new synthesis." —Danny Dorling, Professor of Geography, University of Oxford Key Methods in Geography is the perfect introductory companion, providing an overview of qualitative and quantitative methods for human and physical geography. This Third Edition Features: 12 new chapters representing emerging themes including online, virtual and digital geographical methods Real-life case study examples Summaries and exercises for each chapter Free online access to full text of Progress in Human Geography and Progress in Physical Geography Progress Reports The teaching of research methods is integral to all geography courses: Key Methods in Geography, Third Edition explains all of the key methods with which geography undergraduates must be conversant.

This book aims to promote the synergistic usage of advanced computational methodologies in close relationship to geospatial information across cities of different scales. A rich collection of chapters subsumes current research frontiers originating from disciplines such as geography, urban planning, computer science, statistics, geographic information science and remote sensing. The topics covered in the book are of interest to researchers, postgraduates, practitioners and professionals. The editors hope that the scientific outcome of this book will stimulate future urban-related international and interdisciplinary

research, bringing us closer to the vision of a “new science of cities.”
Doing research is an ever-changing challenge for social scientists. This challenge is harder than ever today as current societies are changing quickly and in many, sometimes conflicting, directions. Social phenomena, personal interactions, and formal and informal relationships are becoming more borderless and disconnected from the anchors of the offline “reality.” These dynamics are heavily marking our time and are suggesting evolutionary challenges in the ways we know, interpret, and analyze the world. Internet and computer-mediated communication (CMC) is being incorporated into every aspect of daily life, and social life has been deeply penetrated by the internet. This is due to recent technological developments that increase the scope and range of online social spaces and the forms and time of participation such as Web 2.0, which widened the opportunities for user-generated content, the emergence of an “internet of things,” and of ubiquitous mobile devices that make it possible to always be connected. This implies an adjustment to epistemological and methodological stances for conducting social research and an adaption of traditional social research methods to the specificities of online interactions in the digital society. The Handbook of Research on Advanced Research Methodologies for a Digital Society covers the different strands of methods most affected by the change in a

digital society and develops a broader theoretical reflection on the future of social research in its challenge to always be fitting, suitable, adaptable, and pertinent to the society to be studied. The chapters are geared towards unlocking the future frontiers and potential for social research in the digital society. They include theoretical, epistemological, and ontological reflections about the digital research methods as well as innovative methods and tools to collect, analyze, and interpret data. This book is ideal for social scientists, practitioners, librarians, researchers, academicians, and students interested in social research methodology and its developments in the digital scenario.

Geographic data is a valuable source of information in modern society. By utilizing alternative sources of this data, the availability and potential applications of geographic information systems can be increased. Volunteered Geographic Information and the Future of Geospatial Data is a pivotal reference source for the latest scholarly research on information gathering from volunteers, as opposed to official agencies and private companies, to compile geospatial data. Highlighting a range of pertinent topics such as regional landscape mapping, road safety, and land usage, this book is ideally designed for researchers, academics, students, professionals, and practitioners interested in the growing area of volunteered geographic information.

This book promotes the exploitation of novel and emerging approaches for mapping environmental and urban informatics empowered by citizens. Chapters are grouped in three sections representing the main subjects. The first section describes data acquisition and modeling. The second section focuses on the quality and reliability of data. The final section presents different methods of environmental monitoring and perception. The book includes diverse case studies from Mexico, the United States and Czech Republic. Topics covered in Citizen Empowered Mapping are of interest for research scholars, practitioners, postgraduates, and professionals from a variety of disciplines including geography, environmental science, geographic information science, social science, and computer science.

As governments worldwide are entering the digital age, there are increasing expectations from citizens and stakeholders for a more responsive, efficient, and open government. Innovations in information technology and web technologies can facilitate these changes. Innovative Perspectives on Public Administration in the Digital Age is a critical scholarly resource that examines the prevalence of e-government and the advancements of information systems to facilitate a government that is more open and accessible to citizens and businesses. Highlighting coverage on a broad range of topics such as online civic

engagement, e-petition, and privacy and security, this publication is geared toward academicians, practitioners, and government officials seeking current and relevant research on the use of online and technological systems for the advancement of government and public policy.

This book focuses on the study of the remarkable new source of geographic information that has become available in the form of user-generated content accessible over the Internet through mobile and Web applications. The exploitation, integration and application of these sources, termed volunteered geographic information (VGI) or crowdsourced geographic information (CGI), offer scientists an unprecedented opportunity to conduct research on a variety of topics at multiple scales and for diversified objectives. The Handbook is organized in five parts, addressing the fundamental questions: What motivates citizens to provide such information in the public domain, and what factors govern/predict its validity? What methods might be used to validate such information? Can VGI be framed within the larger domain of sensor networks, in which inert and static sensors are replaced or combined by intelligent and mobile humans equipped with sensing devices? What limitations are imposed on VGI by differential access to broadband Internet, mobile phones, and other communication technologies, and by concerns over privacy? How do VGI and crowdsourcing enable innovation applications to benefit human society? Chapters examine how crowdsourcing techniques and methods, and the VGI phenomenon, have motivated a multidisciplinary research community to identify both fields of applications and quality criteria depending on the use of VGI. Besides harvesting tools and storage of these data, research has paid remarkable

attention to these information resources, in an age when information and participation is one of the most important drivers of development. The collection opens questions and points to new research directions in addition to the findings that each of the authors demonstrates. Despite rapid progress in VGI research, this Handbook also shows that there are technical, social, political and methodological challenges that require further studies and research.

This is the era of Big Data and computational social science. It is an era that requires tools which can do more than visualise data but also model the complex relation between data and human action and interaction. Agent-Based Models (ABM) - computational models which simulate human action and interaction – do just that. This textbook explains how to design and build ABM and how to link the models to Geographical Information Systems. It guides you from the basics through to constructing more complex models which work with data and human behaviour in a spatial context. All of the fundamental concepts are explained and related to practical examples to facilitate learning (with models developed in NetLogo with all code examples available on the accompanying website). You will be able to use these models to develop your own applications and link, where appropriate, to Geographical Information Systems. All of the key ideas and methods are explained in detail: geographical modelling; an introduction to ABM; the fundamentals of Geographical Information Science; why ABM and GIS; using QGIS; designing and building an ABM; calibration and validation; modelling human behaviour; visualisation and 3D ABM; using Big Geosocial Data, GIS and ABM. An applied primer, that provides fundamental knowledge and practical skills, it will provide you with the skills to build and run your own models, and to begin your own research projects.

The book consists of peer-reviewed papers from the 9th symposium on Location Based

Services (LBS) which is targeted to researchers, industry/market operators and students of different backgrounds (scientific, engineering and humanistic). As the research field is developing and changing fast, this book follows up on current trends and gives suggestions and guidance to further research. This book offers a common ground bringing together various disciplines and practice, knowledge, experiences, plans and ideas on how LBS can and could be improved and on how it will influence both science and society. The book comprises front-end publications organized into sections on: spatial-temporal data acquisition, processing & analysis; positioning / indoor positioning; way-finding / navigation (indoor / outdoor) & smart mobile phone navigation; interactions, user studies and evaluations; innovative LBS systems & applications.

This book presents a selection of manuscripts submitted to the 2017 International Cartographic Conference held in Washington, DC at the beginning of July and made available at the conference. These manuscripts have been selected by the Scientific Program Committee and represent the wide-range of research that is done in the discipline. It also forms an important international collection representing research from at least 30-40 countries.

Advances in Web-based GIS, Mapping Services and Applications is published as part of ISPRS WG IV/5 effort, and aims at presenting (1) Recent technological advancements, e.g., new developments under Web 2.0, map mashups, neogeography and the like; (2) Balanced theoretical discussions and technical implementations; (3) Commentary on the current stage

This book reports on new theories and applications in the field of intelligent systems and computing. It covers computational and artificial intelligence methods, as well as advances in computer vision, current issues in big data and cloud computing, computation linguistics, and

cyber-physical systems. It also reports on data mining and knowledge extraction technologies, as well as central issues in intelligent information management. Written by active researchers, the respective chapters are based on papers presented at the International Conference on Computer Science and Information Technologies (CSIT 2017), held on September 5–8, 2017, in Lviv, Ukraine; and at two workshops accompanying the conference: one on inductive modeling, jointly organized by the Lviv Polytechnic National University and the National Academy of Science of Ukraine; and another on project management, which was jointly organized by the Lviv Polytechnic National University, the International Project Management Association, the Ukrainian Project Management Association, the Kazakhstan Project Management Association, and Nazarbayev University. Given its breadth of coverage, the book provides academics and professionals with extensive information and a timely snapshot of the field of intelligent systems, and is sure to foster new discussions and collaborations among different groups.

Das sechsbändige Handbuch ist ein hochwertiges Werk über die Geodäsie unserer Zeit. Neben einer guten Lesbarkeit vermittelt es dennoch den wissenschaftlichen Ansatz und richtet sich an Kollegen in Praxis und Wissenschaft, aus Nachbardisziplinen und allgemein an Studierende und Interessierte. Die in den Beiträgen behandelten Themen führen systematisch in Aufgabenstellung, Methodik und zukünftige Entwicklungen ein. Die Themen reichen von der Mathematischen und Physikalischen Geodäsie sowie der Satellitengeodäsie über die Ingenieurgeodäsie, die Bodenordnung und das Landmanagement, die Photogrammetrie und Fernerkundung bis zu Geoinformationssystemen und der Kartographie.

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.

This book reports on new theories and applications in the field of intelligent systems and computing. It covers cutting-edge computational and artificial intelligence methods, advances in computer vision, big data, cloud computing, and computation linguistics, as well as cyber-physical and intelligent information management systems. The respective chapters are based on selected papers presented at the workshop on intelligent systems and computing, held during the International Conference on Computer Science and Information Technologies, CSIT 2020, which was jointly organized on September 23-26, 2020, by the Lviv Polytechnic National University, Ukraine, the Kharkiv National University of Radio Electronics, Ukraine, and the Technical University of Lodz, Poland, under patronage of Ministry of Education and Science of Ukraine. Given its breadth of coverage, the book provides academics and professionals with extensive information and a timely snapshot of the field of intelligent systems, and is sure to foster new discussions and collaborations among different groups.

This book shows how Geospatial Information Systems (GIS) can be used for operations management in public institutions. It covers theory and practical applications, ranging from tracking public health trends to mapping transportation routes to charting the safest handling of hazardous materials. Along with an expert line-up of contributors and case studies, the editor

provides a complete overview of how to use GIS as part of a successful, collaborative data analysis, and how to translate the information into cost-saving decisions, or even life-saving ones.

Bridge Maintenance, Safety, Management, Life-Cycle Sustainability and Innovations contains lectures and papers presented at the Tenth International Conference on Bridge Maintenance, Safety and Management (IABMAS 2020), held in Sapporo, Hokkaido, Japan, April 11–15, 2021. This volume consists of a book of extended abstracts and a USB card containing the full papers of 571 contributions presented at IABMAS 2020, including the T.Y. Lin Lecture, 9 Keynote Lectures, and 561 technical papers from 40 countries. The contributions presented at IABMAS 2020 deal with the state of the art as well as emerging concepts and innovative applications related to the main aspects of maintenance, safety, management, life-cycle sustainability and technological innovations of bridges. Major topics include: advanced bridge design, construction and maintenance approaches, safety, reliability and risk evaluation, life-cycle management, life-cycle sustainability, standardization, analytical models, bridge management systems, service life prediction, maintenance and management strategies, structural health monitoring, non-destructive testing and field testing, safety, resilience, robustness and redundancy, durability enhancement, repair and rehabilitation, fatigue and corrosion, extreme loads, and application of information and computer technology and artificial intelligence for bridges, among others. This volume provides both an up-to-date overview of the field of bridge engineering and significant contributions to the process of making more rational decisions on maintenance, safety, management, life-cycle sustainability and technological innovations of bridges for the purpose of enhancing the welfare of society. The

Editors hope that these Proceedings will serve as a valuable reference to all concerned with bridge structure and infrastructure systems, including engineers, researchers, academics and students from all areas of bridge engineering.

This volume provides preliminary recommendations on ways to educate and develop experience-based expertise among disaster response, security and other professionals from diverse backgrounds, whose current and future interests relate to crisis management. The book takes a multidisciplinary approach to improving regional security cooperation and to addressing the complex issues of climate change and disasters on military activities. The main aims of this proceedings volume are: -to provide an Education and Individual Training Activity Common Core Curriculum, whose main purpose is to support increased awareness of the implications of Climate Change; -to identify broad issues on climate change and disasters, particularly those with the highest importance and relevance to regional security. The Crisis Management and Disaster Response Centre of Excellence (CMDR COE) conducted an Advanced Research Workshop “Climate Change Implications on Military Activities in the Balkans Region” between 05-07 July, 2016. The event was supported by the NATO Science for Peace (SPS) Program and gathered distinguished experts from various international organizations and civil-military agencies.

Are you a researcher struggling to mine and make sense of a mountain of fashion data? Are you interested in learning about how digital methods and tools could enhance your research? Have you thought about ways to spark and engage in academic conversations on social media? Have you wondered how digital technologies are internationalizing the field of fashion and textile studies? Digital Research Methods in Fashion and Textile Studies presents the

reader with a variety of digital methodologies to help build skills in searching for, analyzing, and discussing vintage design, photography, and writing on fashion, as well as historic and ethnographic dress and textile objects themselves. Each chapter focuses upon a different method, problem, or research site, including: - Maximalism and mixed-methods approaches to research - Searching large databases effectively - Pattern recognition and visual searching. - Critical reading, use, and citation of social media texts - Digital ethnography and shopping as research - Data visualization and mapping - Images in the public domain From advanced undergraduates and postgraduate students working on research projects to veteran professionals in fashion and textile history and beyond, everyone can benefit from a diverse set of fresh approaches to conducting and disseminating research. In the current age of instant gratification, with users snapping and posting images from runway shows long before the clothes will ever appear instores, the world of fashion is increasingly digital and fast-paced. Research on fashion is, too. Digital Research Methods in Fashion and Textile Studies will help you keep up in this rapidly changing world.

This handbook covers a wide range of topics related to the collection, processing, analysis, and use of geospatial data in their various forms. This handbook provides an overview of how spatial computing technologies for big data can be organized and implemented to solve real-world problems. Diverse subdomains ranging from indoor mapping and navigation over trajectory computing to earth observation from space, are also present in this handbook. It combines fundamental contributions focusing on spatio-textual analysis, uncertain databases, and spatial statistics with application examples such as road network detection or colocation detection using GPUs. In summary, this handbook gives an essential introduction and

overview of the rich field of spatial information science and big geospatial data. It introduces three different perspectives, which together define the field of big geospatial data: a societal, governmental, and governance perspective. It discusses questions of how the acquisition, distribution and exploitation of big geospatial data must be organized both on the scale of companies and countries. A second perspective is a theory-oriented set of contributions on arbitrary spatial data with contributions introducing into the exciting field of spatial statistics or into uncertain databases. A third perspective is taking a very practical perspective to big geospatial data, ranging from chapters that describe how big geospatial data infrastructures can be implemented and how specific applications can be implemented on top of big geospatial data. This would include for example, research in historic map data, road network extraction, damage estimation from remote sensing imagery, or the analysis of spatio-textual collections and social media. This multi-disciplinary approach makes the book unique. This handbook can be used as a reference for undergraduate students, graduate students and researchers focused on big geospatial data. Professionals can use this book, as well as practitioners facing big collections of geospatial data.

Can the nation state survive the internet? Or will the internet be territorially fragmented along state boundaries? This book investigates these questions.

This book offers a timely snapshot of soft computing methodologies and their applications to various problems related to sustainability, including electric energy consumption; fault diagnosis; vessel fuel consumption; determining the best sites for new malls; maritime port projects; and ad-hoc vehicular networks. Further, it demonstrates how metaheuristics and machine learning methods, fuzzy linear programming, neural networks, computing with words,

linguistic models and other soft computing methods can be efficiently used to solve real-world problems. Intended as a practice-oriented guide for students, researchers, and professionals working at the interface between computer science, industrial engineering, naval engineering, agriculture, and sustainable development / climate change research, it provides readers with a set of intelligent solutions, helping them answer a range of emerging questions related to sustainability.

Geographical and Fingerprinting Data for Positioning and Navigation Systems: Challenges, Experiences and Technology Roadmap explores the state-of-the -art software tools and innovative strategies to provide better understanding of positioning and navigation in indoor environments using fingerprinting techniques. The book provides the different problems and challenges of indoor positioning and navigation services and shows how fingerprinting can be used to address such necessities. This advanced publication provides the useful references educational institutions, industry, academic researchers, professionals, developers and practitioners need to apply, evaluate and reproduce this book's contributions. The readers will learn how to apply the necessary infrastructure to provide fingerprinting services and scalable environments to deal with fingerprint data. Provides the current state of fingerprinting for indoor positioning and navigation, along with its challenges and achievements Presents solutions for using WIFI signals to position and navigate in indoor environments Covers solutions for using the magnetic field to position and navigate in indoor environments Contains solutions of a modular positioning system as a solution

for seamless positioning Analyzes geographical and fingerprint data in order to provide indoor/outdoor location and navigation systems

Decision makers, such as government officials, need to better understand human activity in order to make informed decisions. With the ability to measure and explore geographic space through the use of geospatial intelligence data sources including imagery and mapping data, they are better able to measure factors affecting the human population. As a broad field of study, geospatial research has applications in a variety of fields including military science, environmental science, civil engineering, and space exploration. Geospatial Intelligence: Concepts, Methodologies, Tools, and Applications explores multidisciplinary applications of geographic information systems to describe, assess, and visually depict physical features and to gather data, information, and knowledge regarding human activity. Highlighting a range of topics such as geovisualization, spatial analysis, and landscape mapping, this multi-volume book is ideally designed for data scientists, engineers, government agencies, researchers, and graduate-level students in GIS programs.

Historical maps are fascinating documents and a valuable source of information for scientists of various disciplines. Many of these maps are available as scanned bitmap images, but in order to make them searchable in useful ways, a structured representation of the contained information is desirable. This book deals with the extraction of spatial information from historical maps. This cannot be expected to be

solved fully automatically (since it involves difficult semantics), but is also too tedious to be done manually at scale. The methodology used in this book combines the strengths of both computers and humans: it describes efficient algorithms to largely automate information extraction tasks and pairs these algorithms with smart user interactions to handle what is not understood by the algorithm. The effectiveness of this approach is shown for various kinds of spatial documents from the 16th to the early 20th century.
This book starts with an overview of GIS technology, what GIS technology is, what it can do, what software products are available, etc. Then, throughout the book, the author explains with many case studies, programs, maps, graphics, and 3D models how GIS and other related technologies can be used to automate mapping processes, collect, process, edit, store, manage, and share datasets, statistically analyze data, model, and visualize large datasets to understand patterns, trends, and relationships to make educated decisions. This book is an excellent resource for anyone who is interested in GIS and related technologies, geology, natural resource, and environmental science.
OpenStreetMap in GIScienceExperiences, Research, and ApplicationsSpringer
This edited volume presents a collection of lessons learned with, and research conducted on, OpenStreetMap, the goal being to promote the project's integration. The respective chapters address a) state-of-the-art and cutting-edge approaches to data quality analysis in OpenStreetMap, b) investigations on understanding OpenStreetMap

contributors and the nature of their contributions, c) identifying patterns of contributions and contributors, d) applications of OpenStreetMap in different domains, e) mining value-added knowledge and information from OpenStreetMap, f) limitations in the analysis OpenStreetMap data, and g) integrating OpenStreetMap with commercial and non-commercial datasets. The book offers an ideal opportunity to present and disseminate a number of cutting-edge developments and applications in the field of geography, spatial statistics, GIS, social science, and cartography.

The advent of connected, smart technologies for the built environment may promise a significant value that has to be reached to develop digital city models. At the international level, the role of digital twin is strictly related to massive amounts of data that need to be processed, which proposes several challenges in terms of digital technologies capability, computing, interoperability, simulation, calibration, and representation. In these terms, the development of 3D parametric models as digital twins to evaluate energy assessment of private and public buildings is considered one of the main challenges of the last years. The ability to gather, manage, and communicate contents related to energy saving in buildings for the development of smart cities must be considered a specificity in the age of connection to increase citizen awareness of these fields. The Handbook of Research on Developing Smart Cities Based on Digital Twins contains in-depth research focused on the description of methods, processes, and tools that can be adopted to achieve smart city goals. The

book presents a valid medium for disseminating innovative data management methods related to smart city topics. While highlighting topics such as data visualization, a web-based ICT platform, and data-sharing methods, this book is ideally intended for researchers in the building industry, energy, and computer science fields; public administrators; building managers; and energy professionals along with practitioners, stakeholders, researchers, academicians, and students interested in the implementation of smart technologies for the built environment.

This book is published open access under a CC BY 4.0 license. Over the past decades, rapid developments in digital and sensing technologies, such as the Cloud, Web and Internet of Things, have dramatically changed the way we live and work. The digital transformation is revolutionizing our ability to monitor our planet and transforming the way we access, process and exploit Earth Observation data from satellites. This book reviews these megatrends and their implications for the Earth Observation community as well as the wider data economy. It provides insight into new paradigms of Open Science and Innovation applied to space data, which are characterized by openness, access to large volume of complex data, wide availability of new community tools, new techniques for big data analytics such as Artificial Intelligence, unprecedented level of computing power, and new types of collaboration among researchers, innovators, entrepreneurs and citizen scientists. In addition, this book aims to provide readers with some reflections on the future of Earth Observation, highlighting through a series of use

cases not just the new opportunities created by the New Space revolution, but also the new challenges that must be addressed in order to make the most of the large volume of complex and diverse data delivered by the new generation of satellites.