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# Geospatial Intelligence Springer

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Game-based Approaches to the Analysis of Geo-Information  
Geospatial Technology for Environmental Hazards  
Third International Conference, GI Science 2004 Adelphi, MD, USA, October 20-23, 2004 Proceedings  
Multimedia Information Systems  
GIScience Teaching and Learning Perspectives  
Principles and Practice  
The Role of Geospatial Technologies for Investigating Crime and Providing Evidence  
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Concepts, Methodologies, Tools, and Applications  
Spatial Analysis and GeoComputation  
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Intelligent Edge, Fog and Mist Computing  
Spatial Information Technology for Sustainable Development Goals  
Applied Data Science in Tourism  
A Geospatial Technology Based Approach  
Springer Handbook of Geographic Information  
Geospatial Data in a Changing World  
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## DEREK CALLAHAN

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### **Game-based Approaches to the Analysis of Geo-Information** Springer Nature

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.

*Geospatial Technology for Environmental Hazards* IGI Global  
This book covers the latest research on landmarks in GIS, including practical applications. It addresses perceptual and cognitive aspects of natural and artificial cognitive systems, computational aspects with respect to identifying or selecting landmarks for various purposes, and communication aspects of human-computer interaction for spatial information provision. Concise and organized, the book equips readers to handle complex conceptual aspects of trying to define and formally model these situations. The book provides a thorough review of the cognitive, conceptual, computational and communication aspects of GIS landmarks. This review is unique for comparing

concepts across a spectrum of sub-disciplines in the field. Portions of the ideas discussed led to the world's first commercial navigation service using landmarks selected with cognitive principles. Landmarks: GI Science for Intelligent Services targets practitioners and researchers working in geographic information science, computer science, information science, cognitive science, geography and psychology. Advanced-level students in computer science, geography and psychology will also find this book valuable as a secondary textbook or reference.

Third International Conference, GI Science 2004 Adelphi, MD, USA, October 20-23, 2004 Proceedings Springer Nature

This edited volume is based on the best papers accepted for presentation during the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1), Tunisia 2018. The book compiles a wide range of topics addressing various issues by experienced researchers mainly from research institutes in the Mediterranean, MENA region, North America and Asia. Remote sensing observations can close gaps in information scarcity by complementing ground-based sparse data. Spatial, spectral, temporal and radiometric characteristics of satellites sensors are most suitable for features identification. The local to global nature and broad spatial scale of remote sensing with the wide range of spectral coverage are essential characteristics, which make satellites an ideal platform for mapping, observation, monitoring, assessing and providing necessary mitigation measures and control for different related Earth's systems processes. Main topics in this book include: Geo-informatics Applications, Land Use / Land Cover Mapping and Change Detection, Emerging Remote Sensing Applications, Rock Formations / Soil Lithology Mapping, Vegetation Mapping Impact and Assessment, Natural Hazards Mapping and Assessment, Ground Water Mapping and Assessment, Coastal Management of Marine Environment and Atmospheric Sensing.

**Multimedia Information Systems** Springer Science & Business Media

Multimedia Information Systems brings together in one place important contributions and up-to-date research results in this fast moving area. Multimedia Information Systems serves as an excellent reference, providing insight into some of the most

challenging research issues in the field.

*GIScience Teaching and Learning Perspectives* Springer  
*Geospatial Intelligence Applications and Future Trends* Springer Nature

Principles and Practice Springer Science & Business Media

Access to large data sets has led to a paradigm shift in the tourism research landscape. Big data is enabling a new form of knowledge gain, while at the same time shaking the epistemological foundations and requiring new methods and analysis approaches. It allows for interdisciplinary cooperation between computer sciences and social and economic sciences, and complements the traditional research approaches. This book provides a broad basis for the practical application of data science approaches such as machine learning, text mining, social network analysis, and many more, which are essential for interdisciplinary tourism research. Each method is presented in principle, viewed analytically, and its advantages and disadvantages are weighed up and typical fields of application are presented. The correct methodical application is presented with a "how-to" approach, together with code examples, allowing a wider reader base including researchers, practitioners, and students entering the field. The book is a very well-structured introduction to data science - not only in tourism - and its methodological foundations, accompanied by well-chosen practical cases. It underlines an important insight: data are only representations of reality, you need methodological skills and domain background to derive knowledge from them - Hannes Werthner, Vienna University of Technology Roman Egger has accomplished a difficult but necessary task: make clear how data science can practically support and foster travel and tourism research and applications. The book offers a well-taught collection of chapters giving a comprehensive and deep account of AI and data science for tourism - Francesco Ricci, Free University of Bozen-Bolzano  
This well-structured and easy-to-read book provides a comprehensive overview of data science in tourism. It contributes largely to the methodological repository beyond traditional methods. - Rob Law, University of Macau

**The Role of Geospatial Technologies for Investigating Crime and Providing Evidence** Springer Nature

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.

Proceedings of the International Conference on Geo-Spatial Technologies and Earth Resources 2017 Springer Science & Business Media

This textbook aims to develop a scientific knowledge base on spatial information technology to communicate the United Nations' Sustainable Development Goals (SDGs) among students, researchers, professionals and laymen. The book improves understanding of the spatial database and explains how to extract information from this for planning purposes. To enhance the knowledge of geoscientists and environmentalists, the book describes the basic fundamental concepts to advance techniques for spatial data management and analysis and discusses the methodology. The Geographic Information System (GIS), remote sensing and Global Positioning System (GPS) are presented in an integrated manner for the planning of resources and infrastructure. The management of these systems is discussed in a very lucid way to develop the reader's skills. The proper procedure for map making and spatial analysis are included along with case studies to the reader. Where the first part of the book

discusses the conceptual background, the second part deals with case studies using these applications in different disciplines. The presented case studies include land use, agriculture, flood, watershed characterization and infrastructure assessment for the Sustainable Development Goals.

**Geogames and Geoplay** Springer

In Computer Graphics, the use of intelligent techniques started more recently than in other research areas. However, during these last two decades, the use of intelligent Computer Graphics techniques is growing up year after year and more and more interesting techniques are presented in this area. The purpose of this volume is to present current work of the Intelligent Computer Graphics community, a community growing up year after year. This volume is a kind of continuation of the previously published Springer volumes "Artificial Intelligence Techniques for Computer Graphics" (2008), "Intelligent Computer Graphics 2009" (2009), "Intelligent Computer Graphics 2010" (2010) and "Intelligent Computer Graphics 2011" (2011). Usually, this kind of volume contains, every year, selected extended papers from the corresponding 3IA Conference of the year. However, the current volume is made from directly reviewed and selected papers, submitted for publication in the volume "Intelligent Computer Graphics 2012". This year papers are particularly exciting and concern areas like plant modelling, text-to-scene systems, information visualization, computer-aided geometric design, artificial life, computer games, realistic rendering and many other very important themes.

**First International Conference, SpatialDI 2020, Virtual Event, May 8-9, 2020, Proceedings** Springer

This two-volume set (LNAI 11055 and LNAI 11056) constitutes the refereed proceedings of the 10th International Conference on Collective Intelligence, ICCCI 2018, held in Bristol, UK, in September 2018. The 98 full papers presented were carefully reviewed and selected from 240 submissions. The conference focuses on knowledge engineering and semantic web, social network analysis, recommendation methods and recommender systems, agents and multi-agent systems, text processing and information retrieval, data mining methods and applications, decision support and control systems, sensor networks and internet of things, as well as computer vision techniques.

*Concepts, Methodologies, Tools, and Applications* Springer

This book brings together contributions from researchers, GIS professionals and game designers to provide a first overview of this highly interdisciplinary field. Its scope ranges from fundamentals about games and play, geographic information technologies, game design and culture, to current examples and forward looking analysis. Of interest to anyone interested in creating and using Geogames, this volume serves as a channel for sharing early experiences, discussing technological challenges and solutions, and outlines a future research agenda. Games and play are part of human life, and in many game activities, place, space and geography plays a central role in determining the rules and interactions that are characteristic of each game. Recent developments and widespread access to mobile information, communication, and geospatial technologies have spurred a flurry of developments, including many variations of gaming activities that are situated in, or otherwise connected to the real world.

**Spatial Analysis and GeoComputation** Springer

This book focuses on small flying drones and their applications in conducting geographic surveys. Scholars and professionals will discover the potential of this tool, and hopefully develop a conceptual and methodological framework for doing the following things: (a) Translate their data acquisition needs into specifications. (b) Use the developed specifications to choose the best accessible configuration for their drones, and (c) Design and organize effective and low-cost field deployment and flight operations by integrating technical aspects with regulatory and research requirements. Readers can apply this knowledge to work in cartography, environmental monitoring and analysis, land-use studies and landscape archaeology. Particular attention is also given to the reasons why a drone can dramatically boost a geographer's capability to understand geographic phenomena both from hard-science and humanities-oriented approach.

**Spatial Data Mining** Springer Nature

In Decision Making and Problem Solving: A Practical Guide for Applied Research, the author utilizes traditional approaches, tools, and techniques adopted to solve current day-to-day, real-life problems. The book offers guidance in identifying and applying accurate methods for designing a strategy as well as implementing these strategies in the real world. The book includes realistic case studies and practical approaches that should help readers understand how the decision making occurs

and can be applied to problem solving under deep uncertainty.

**Intelligent Computer Graphics 2012** Springer

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.

**24th Italian Conference, ASITA 2021, Genoa, Italy, July 1-2, 9, 16, 23, 2021, Proceedings** Springer

A variety of disciplines and professions have embraced geospatial technologies for collecting, storing, manipulating, analyzing and displaying spatial data to investigate crime, prosecute and convict offenders, exonerate suspects and submit evidence in civil lawsuits. The applications, acceptability and relevance and procedural legality of each geospatial technologies vary. The purpose of this book is to explain the nature of geospatial technologies, demonstrate a variety of geospatial applications used to investigate and litigate civil and criminal activities and to provide a reference of current acceptability of geospatial technology in the production of evidence. This book is an

introductory overview designed to appeal to researchers and practitioners across disciplinary boundaries. The authors of this book are researchers and practitioners across disciplines and professions, experts in the field.

Springer Science & Business

Imagine yourself as a military officer in a conflict zone trying to identify locations of weapons caches supporting road-side bomb attacks on your country's troops. Or imagine yourself as a public health expert trying to identify the location of contaminated water that is causing diarrheal diseases in a local population. Geospatial abduction is a new technique introduced by the authors that allows such problems to be solved. Geospatial Abduction provides the mathematics underlying geospatial abduction and the algorithms to solve them in practice; it has wide applicability and can be used by practitioners and researchers in many different fields. Real-world applications of geospatial abduction to military problems are included. Compelling examples drawn from other domains as diverse as criminology, epidemiology and archaeology are covered as well. This book also includes access to a dedicated website on geospatial abduction hosted by University of Maryland. Geospatial Abduction targets practitioners working in general AI, game theory, linear programming, data mining, machine learning, and more. Those working in the fields of computer science, mathematics, geoinformation, geological and biological science will also find this book valuable.

**Intelligent Edge, Fog and Mist Computing** Springer

Globally, concerns for the environment and human well-being have increased as results of threats imposed by climate change and disasters, environmental degradation, pollution of natural resources, water scarcity and proliferation of slums. Finding appropriate solutions to these threats and challenges is not simple, as these are generally complex and require state-of-the-art technology to collect, measure, handle and analyse large volumes of varying data sets. However, the recent advances in sensor technology, coupled with the rapid development of computational power, have greatly enhanced our abilities to capture, store and analyse the surrounding physical environment. This book explores diverse dimensions of geo-intelligence (GI) technology in developing a computing framework for location-based, data-integrating earth observation and predictive modelling to address these issues at all levels and scales. The

book provides insight into the applications of GI technology in several fields of spatial and social sciences and attempts to bridge the gap between them.

*Spatial Information Technology for Sustainable Development Goals* Springer Nature

This book is a comprehensive collection of chapters focusing on the core areas of computing and their further applications in the real world. Each chapter is a paper presented at the Computing Conference 2021 held on 15-16 July 2021. Computing 2021 attracted a total of 638 submissions which underwent a double-blind peer review process. Of those 638 submissions, 235 submissions have been selected to be included in this book. The goal of this conference is to give a platform to researchers with fundamental contributions and to be a premier venue for academic and industry practitioners to share new ideas and development experiences. We hope that readers find this volume interesting and valuable as it provides the state-of-the-art intelligent methods and techniques for solving real-world problems. We also expect that the conference and its publications is a trigger for further related research and technology improvements in this important subject. .

**Applied Data Science in Tourism** Springer Nature

This book is focused on an emerging area, i.e. combination of IoT and semantic technologies, which should enable breaking the silos of local and/or domain-specific IoT deployments. Taking into account the way that IoT ecosystems are realized, several challenges can be identified. Among them of definite importance are (this list is, obviously, not exhaustive): (i) How to provide common representation and/or shared understanding of data that will enable analysis across (systematically growing) ecosystems? (ii) How to build ecosystems based on data flows? (iii) How to track data provenance? (iv) How to ensure/manage trust? (v) How to search for things/data within ecosystems? (vi) How to store data and assure its quality? Semantic technologies are often considered among the possible ways of addressing these (and other, related) questions. More precisely, in academic research and in industrial practice, semantic technologies materialize in the following contexts (this list is, also, not exhaustive, but indicates the breadth of scope of semantic technology usability): (i) representation of artefacts in IoT ecosystems and IoT networks, (ii) providing interoperability between heterogeneous IoT

artefacts, (ii) representation of provenance information, enabling provenance tracking, trust establishment, and quality assessment, (iv) semantic search, enabling flexible access to data originating in different places across the ecosystem, (v) flexible storage of heterogeneous data. Finally, Semantic Web, Web of Things, and Linked Open Data are architectural paradigms, with which the aforementioned solutions are to be integrated, to provide production-ready deployments.

**A Geospatial Technology Based Approach** Springer  
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.