

Spatial Database For Gps Wildlife Tracking Data A Practical Guide To Creating A Data Management System With Postgresqlpostgis And R

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. Encyclopedia of Animal Behavior, Second Edition, the latest update since the 2010 release, builds upon the solid foundation established in the first edition. Updated sections include Host-parasite interactions, Vertebrate social behavior, and the introduction of 'overview essays' that boost the book's comprehensive detail. The structure for the work is modified to accommodate a better grouping of subjects. Some chapters have been reshuffled, with section headings combined or modified. Represents a one-stop resource for scientifically reliable information on animal behavior Provides comparative approaches, including the perspective of evolutionary biologists, physiologists, endocrinologists, neuroscientists and psychologists Includes multimedia features in the online version that offer accessible tools to readers

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looking to deepen their understanding

Williams, Damon L. Williford

A primatologist's guide to using geographic information systems (GIS); from mapping and field accuracy, to tracking travel routes and the impact of logging.

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

The Chinese government is increasingly focusing on ecological construction and has subscribed to a national "Ecological Civilization Construction". Ecological research and protection practice develop so fast and achieve a lot at the national agenda. This book is a synthesis of five most exciting and dominant themes in contemporary ecological research in China: biodiversity, ecosystem management, degraded ecosystem restoration, global change and sustainable development. This book spans all the Earth's major ecosystems, such as forests, oceans, grasslands, wetlands, lakes, rivers, farmland and cities. This book provides a platform for scientific research across a variety of disciplines. It will be invaluable to experts, policymakers and local officers and will also be a highly useful resource for undergraduate and postgraduate students. This book will allow researchers, students and policymakers outside China to learn about the significant achievements and applications of ecological research within China.

Conflicts about wildlife are usually portrayed and understood as resulting from the negative impacts of wildlife on human livelihoods or property. However, a greater depth of analysis reveals that many instances of human-wildlife conflict are often better understood as people-people conflict, wherein there is a clash of values between different human groups. *Understanding Conflicts About Wildlife* unites academics and practitioners from across the globe to develop a holistic view of these interactions. It considers the political and social dimensions of 'human-wildlife conflicts' alongside effective methodological approaches, and will be of value to academics, conservationists and policy makers.

This book guides animal ecologists, biologists and wildlife and data managers through a step-by-step procedure to build their own advanced software platforms to manage and process wildlife tracking data. This unique, problem-solving-oriented guide focuses on how to extract the most from GPS animal tracking data, while preventing error propagation and optimizing analysis performance. Based on the open source PostgreSQL/PostGIS spatial database, the software platform will allow researchers and managers to integrate and harmonize GPS tracking data together with animal characteristics, environmental data sets, including remote sensing image time series, and other bio-logged data, such as

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acceleration data. Moreover, the book shows how the powerful R statistical environment can be integrated into the software platform, either connecting the database with R, or embedding the same tools in the database through the PostgreSQL extension PL/R. The client/server architecture allows users to remotely connect a number of software applications that can be used as a database front end, including GIS software and WebGIS. Each chapter offers a real-world data management and processing problem that is discussed in its biological context; solutions are proposed and exemplified through ad hoc SQL code, progressively exploring the potential of spatial database functions applied to the respective wildlife tracking case. Finally, wildlife tracking management issues are discussed in the increasingly widespread framework of collaborative science and data sharing. GPS animal telemetry data from a real study, freely available online, are used to demonstrate the proposed examples. This book is also suitable for undergraduate and graduate students, if accompanied by the basics of databases.

From foraging patterns in a single tree to social interactions across a home range, how primates use space is a key question in the field of primate behavioral ecology. Drawing on the latest advances in spatial analysis tools, this book offers practical guidance on applying geographic information systems (GIS) to central questions in primatology. An initial methodological section discusses niche modelling, home range analysis and agent-based modelling, with a focus on remote data collection. Research-based chapters demonstrate how ecologists apply this technology to study intensity of range use and travel routes, as well as to population-level questions; how GIS can help to assess the impact of logging, mining and hunting, as well as to inform primate conservation strategies. Offering best practice guidelines on cutting-edge technologies, this is an indispensable resource for any primatologist or student of animal behaviour.

For thousands of years, tracking animals meant following footprints. Now satellites, drones, camera traps, cellphone networks, apps and accelerometers allow us to see the natural world like never before. Geographer James Cheshire and designer Oliver Uberti take you to the forefront of this animal-tracking revolution. Meet the scientists gathering wild data - from seals mapping the sea to baboons making decisions, from birds dodging tornadoes to jaguars taking selfies. Join the journeys of sharks, elephants, bumblebees, snowy owls, and a wolf looking for love. Find an armchair, cancel your plans and go where the animals go.

Discusses the underlying theory of GPS and GIS without becoming overly technical. * Includes case studies presenting international experience and real-world applications. * Provides discussions of instrumentation and guidelines for selecting the right device for the job.

GPS and GNSS Technology in Geosciences offers an interdisciplinary approach to applying advances in GPS/GNSS technology for geoscience research and practice. As GPS/GNSS signals can be used to provide useful information about

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the Earth's surface characteristics and land surface composition, GPS equipment and services for commercial purposes continues to grow, thus resulting in new expectations and demands. This book provides case studies for a deeper understanding of the operation and principles of widely applied approaches and the benefits of the technology in everyday research and activities. Presents processing, methods and techniques of GPS/GNSS implementation that are utilized in in-situ data collection in design and systems analysis Offers an all-inclusive, critical overview of the state-of-the-art in different algorithms and techniques in GPS/GNSS Addresses both theoretical and applied research contributions on the use of this technology in a variety of geoscience disciplines

The National Spatial Data Infrastructure (NSDI) is the means to assemble geographic information that describes the arrangement and attributes of features and phenomena on the Earth. This book advocates the need to make the NSDI more robust. The infrastructure includes the materials, technology, and people necessary to acquire, process, store, and distribute such information to meet a wide variety of needs. The NSDI is more than hardware, software, and data; it is the public foundation on which a marketplace for spatial products will evolve. As Earth faces the greatest mass extinction in 65 million years, the present is a moment of tremendous foment and emergence in ecological science. With leaps in advances in ecological research and the technical tools available, scientists face the critical task of challenging policymakers and the public to recognize the urgency of our global crisis. This book focuses directly on the interplay between theory, data, and analytical methodology in the rapidly evolving fields of animal ecology, conservation, and management. The mixture of topics of particular current relevance includes landscape ecology, remote sensing, spatial modeling, geostatistics, genomics, and ecological informatics. The greatest interest to the practicing scientist and graduate student will be the synthesis and integration of these topics to provide a composite view of the emerging field of spatial ecological informatics and its applications in research and management.

Tropical habitats may contain more than a third of the world's plant and animal species; Costa Rica alone is home to one of the highest levels of biodiversity per unit area in the world, and stands at center stage in worldwide conservation efforts. Within such regions, the use of state-of-the-art digital mapping technologies—sophisticated techniques that are relatively inexpensive and accessible—represents the future of conservation planning and policy. These methods, which employ satellites to obtain visual data on landscapes, allow environmental scientists to monitor encroachment on indigenous territories, trace park boundaries through unmarked wilderness, and identify wildlife habitats in regions where humans have limited access. Focusing on the rich biodiversity of Costa Rica, the contributors demonstrate the use of geographic information systems (GIS) to enhance conservation efforts. They give an overview of the spatial nature of conservation and management and the current status of digital mapping in Costa Rica; a review of the basic principles behind digital mapping technologies; a series of case studies using these technologies at a variety of scales and for a range of conservation and management activities; and the results of the Costa Rican gap analysis project. GIS Methodologies for Developing Conservation Strategies provides powerful tools for those involved in decision-making about the natural environment, particularly in developing nations like Costa Rica where such technologies have not yet been widely adopted. For specialists in such areas as geography, conservation biology, and wildlife and natural resource management, the combination of conceptual background and case examples make the book a crucial addition to the literature.

Geospatial information modeling and mapping has become an important tool for the investigation and management of natural resources at

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the landscape scale. *Spatial Statistics: GeoSpatial Information Modeling and Thematic Mapping* reviews the types and applications of geospatial information data, such as remote sensing, geographic information systems (GIS), and GPS as well as their integration into landscape-scale geospatial statistical models and maps. The book explores how to extract information from remotely sensed imagery, GIS, and GPS, and how to combine this with field data—vegetation, soil, and environmental—to produce a spatial model that can be reconstructed and displayed using GIS software. Readers learn the requirements and limitations of each geospatial modeling and mapping tool. Case studies with real-life examples illustrate important applications of the models. Topics covered in this book include: An overview of the geospatial information sciences and technology and spatial statistics Sampling methods and applications, including probability sampling and nonrandom sampling, and issues to consider in sampling and plot design Fine and coarse scale variability Spatial sampling schemes and spatial pattern Linear and spatial correlation statistics, including Moran's I, Geary's C, cross-correlation statistics, and inverse distance weighting Geospatial statistics analysis using stepwise regression, ordinary least squares (OLS), variogram, kriging, spatial auto-regression, binary classification trees, cokriging, and geospatial models for presence and absence data How to use R statistical software to work on statistical analyses and case studies, and to develop a geospatial statistical model The book includes practical examples and laboratory exercises using ArcInfo, ArcView, ArcGIS, and other popular software for geospatial modeling. It is accessible to readers from various fields, without requiring advanced knowledge of geospatial information sciences or quantitative methods.

Prato and Fagre offer the first systematic, multi-disciplinary assessment of the challenges involved in managing the Crown of the Continent Ecosystem (CCE), an area of the Rocky Mountains that includes northwestern Montana, southwestern Alberta, and southeastern British Columbia. The spectacular landscapes, extensive recreational options, and broad employment opportunities of the CCE have made it one of the fastest growing regions in the United States and Canada, and have led to a shift in its economic base from extractive resources to service-oriented recreation and tourism industries. In the process, however, the amenities and attributes that draw people to this 'New West' are under threat. Pastoral scenes are disappearing as agricultural lands and other open spaces are converted to residential uses, biodiversity is endangered by the fragmentation of fish and wildlife habitats, and many areas are experiencing a decline in air and water quality.

Sustaining Rocky Mountain Landscapes provides a scientific basis for communities to develop policies for managing the growth and economic transformation of the CCE without sacrificing the quality of life and environment for which the land is renowned. The book begins with a natural and economic history of the CCE. It follows with an assessment of current physical and biological conditions in the CCE. The contributors then explore how social, economic, demographic, and environmental forces are transforming ecosystem structure and function. They consider ecosystem change in response to changing patterns of land use, pollution, and drought; the increasing risk of wildfire to wildlife and to human life and property; and the implications of global climate change on the CCE. A final, policy-focused section of the book looks at transboundary issues in ecosystem management and evaluates the potential of community-based and adaptive approaches in ecosystem management.

Contains selected papers from the title international symposium, held in January 1994 in San Francisco, CA. Sections on remote sensing applications, geographic information system (GIS), site characterization, and standards detail the latest findings in areas such as digital elevation data; Landsat T

TRB's National Cooperative Highway Research Program (NCHRP) Report 615: Evaluation of the Use and Effectiveness

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of Wildlife Crossings explores development of an interactive, web-based decision guide protocol for the selection, configuration, and location of wildlife crossings.

This book introduces the Special Issue entitled “Applications of Internet of Things”, of ISPRS International Journal of Geo-Information. Topics covered in this issue include three main parts: (I) intelligent transportation systems (ITSs), (II) location-based services (LBSs), and (III) sensing techniques and applications. Three papers on ITSs are as follows: (1) “Vehicle positioning and speed estimation based on cellular network signals for urban roads,” by Lai and Kuo; (2) “A method for traffic congestion clustering judgment based on grey relational analysis,” by Zhang et al.; and (3) “Smartphone-based pedestrian’s avoidance behavior recognition towards opportunistic road anomaly detection,” by Ishikawa and Fujinami. Three papers on LBSs are as follows: (1) “A high-efficiency method of mobile positioning based on commercial vehicle operation data,” by Chen et al.; (2) “Efficient location privacy-preserving k-anonymity method based on the credible chain,” by Wang et al.; and (3) “Proximity-based asynchronous messaging platform for location-based Internet of things service,” by Gon Jo et al. Two papers on sensing techniques and applications are as follows: (1) “Detection of electronic anklelet wearers’ groupings throughout telematics monitoring,” by Machado et al.; and (2) “Camera coverage estimation based on multistage grid subdivision,” by Wang et al.

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An additional 52 wildlife professionals describe the work of the profession.

This book constitutes the thoroughly refereed post-proceedings of the International Workshop on Integrated Databases, Digital Images and GIS, ISD'99, held in Portland, Maine, USA in June 1999. The 18 revised full papers presented went through a double reviewing process and were selected from nearly 40 original submissions. The book is divided into parts on object extraction from raster images, geospatial analysis, formalisms and modeling, and data access.

This book collects innovative research presented at the 19th Conference of the Association of Geographic Information Laboratories in Europe (AGILE) on Geographic Information Science, held in Helsinki, Finland in 2016.

Showing how GIS and geography provide a framework for ecology and conservation efforts, this book describes how new technological tools for that kind of analysis, chief among them GIS, are being used to revolutionize the work of conservation.

This introductory textbook to wildlife habitat ecology and management offers students and practitioners the basic tools to understand, plan, implement, measure, analyze, and document efforts to improve habitat for wildlife. Providing a step-by-step guide that is adaptable to a range of environmental settings, the authors first lay out the ecological principles applicable to any project. They then take the reader through various sampling designs, measurement techniques, and analytical methods required to develop and complete a habitat project, including the creation of a report or management plan. The authors emphasize key management concepts and provide exercises putting ecological

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principles into practice. Case studies identify emerging issues that are changing and complicating wildlife habitat management. These include large-scale ecological concerns and their social and political challenges—global climate change, the decline in water quality and availability, loss and fragmentation of habitat, broadening invasive species and diseases, increased human-wildlife conflicts, and urbanization. This practical guide is an invaluable reference for students, land managers, and landowners who are developing and implementing management plans for habitat modification and improvement on both private and public lands.

The advances of live cell video imaging and high-throughput technologies for functional and chemical genomics provide unprecedented opportunities to understand how biological processes work in subcellular and multicellular systems. The interdisciplinary research field of Video Bioinformatics is defined by BirBhanu as the automated processing, analysis, understanding, data mining, visualization, query-based retrieval/storage of biological spatiotemporal events/data and knowledge extracted from dynamic images and microscopic videos. Video bioinformatics attempts to provide a deeper understanding of continuous and dynamic life processes. Genome sequences alone lack spatial and temporal information, and video imaging of specific molecules and their spatiotemporal interactions, using a range of imaging methods, are essential to understand how genomes create cells, how cells constitute organisms, and how errant cells cause disease. The book examines interdisciplinary research issues and challenges with examples that deal with organismal dynamics, intercellular and tissue dynamics, intracellular dynamics, protein movement, cell signaling and software and databases for video bioinformatics. Topics and Features

- Covers a set of biological problems, their significance, live-imaging experiments, theory and computational methods, quantifiable experimental results and discussion of results.
- Provides automated methods for analyzing mild traumatic brain injury over time, identifying injury dynamics after neonatal hypoxia-ischemia and visualizing cortical tissue changes during seizure activity as examples of organismal dynamics
- Describes techniques for quantifying the dynamics of human embryonic stem cells with examples of cell detection/segmentation, spreading and other dynamic behaviors which are important for characterizing stem cell health
- Examines and quantifies dynamic processes in plant and fungal systems such as cell trafficking, growth of pollen tubes in model systems such as *Neurospora Crassa* and *Arabidopsis*
- Discusses the dynamics of intracellular molecules for DNA repair and the regulation of cofilin transport using video analysis
- Discusses software, system and database aspects of video bioinformatics by providing examples of 5D cell tracking by FARSIGHT open source toolkit, a survey on available databases and software, biological processes for non-verbal communications and identification and retrieval of moth images

This unique text will be of great interest to researchers and graduate students of Electrical Engineering, Computer Science, Bioengineering, Cell Biology, Toxicology, Genetics, Genomics, Bioinformatics, Computer Vision and Pattern Recognition, Medical Image Analysis, and Cell Molecular and Developmental Biology. The large number of example applications will also appeal to application scientists and engineers. Dr. Bir Bhanu is Distinguished Professor of Electrical & Computer Engineering, Interim Chair of the Department of Bioengineering, Cooperative Professor of Computer Science & Engineering, and Mechanical Engineering and the Director of the Center for Research in Intelligent Systems, at the University of California, Riverside, California, USA. Dr. Prue Talbot is Professor of Cell Biology & Neuroscience and Director of the Stem Cell Center and Core at the University of California Riverside, California, USA.

This book constitutes the refereed proceedings of the Second International Conference on Geographic Information Science, GIScience 2002, held in Boulder, Colorado, USA in September 2002. The 24 revised full papers presented were carefully reviewed and selected from 64 paper submissions. Among the topics addressed are Voronoi diagram representation, geospatial database design, vector data transmission, geographic information retrieval, geo-ontologies, relative motion analysis, Web-based maps information retrieval, spatial pattern recognition,

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environmental decision support systems, multi-scale spatial databases, mobile journey planning, searching geographical data, indexing, terrain modeling, spatial allocation, distributed geographic internet information systems, and spatio-thematic information programming. Exploring Animal Behavior in Laboratory and Field, Second Edition provides a comprehensive manual on animal behavior lab activities. This new edition brings together basic research and methods, presenting applications and problem-solving techniques. It provides all the details to successfully run designed activities while also offering flexibility and ease in setup. The exercises in this volume address animal behavior at all levels, describing behavior, theory, application and communication. Each lab provides details on how to successfully run the activity while also offering flexibility to instructors. This is an important resource for students educators, researchers and practitioners who want to explore and study animal behavior. The field of animal behavior has changed dramatically in the past 15 - 20 years, including a greater use and availability of technology and statistical analysis. In addition, animal behavior has taken on a more applied role in the last decade, with a greater emphasis on conservation and applied behavior, hence the necessity for new resources on the topic. Offers an up-to-date representation of animal behavior Examines ethics and approvals for the study of vertebrate animals Includes contributions from a large field of expertise in the Animal Behavior Society Provides a flexible resource that can be used as a laboratory manual or in a flipped classroom setting

Game meat is consumed world-wide. In most regions, it contributes only a small part to the overall meat and food supply, but for reasons of animal welfare and sustainability it is sometimes considered an alternative to meat from farmed animals. Despite differences in game species, ante mortem conditions (free-range or fenced; wild or semi-domesticated), hunting or harvesting procedures and further handling of the carcass, there are common requirements as regards meat safety and quality. Whereas meat hygiene and safety have been an issue in game meat for export/import for a long time, primary production, domestic supply and direct supply to the consumer have recently been addressed by legislation and these sectors still present unresolved questions and challenges. This book combines 24 contributions presenting the view of experts in game meat hygiene and quality. They address four main topics: i.e. 'hygiene and microbiology', 'epidemiology', 'risk assessment and management' and 'muscle biology and meat quality'. In addition to contributions on this topic by authors from eight European countries, a South African perspective is provided, thus representing the standpoint of a major game meat exporter. This volume is the first in a series on safety and quality assurance along the game meat chain, following a 'from forest to fork' approach and is targeted to scientists in academia and industry, graduate students as well as to governmental officials in veterinary public health and food safety.

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