



# **GIS**

## **A Computing Perspective**

Second Edition

**Michael Worboys**  
**Matt Duckham**



**CRC PRESS**

# Gis A Computing Perspective Second Edition

**Michael F. Worboys, Matt  
Duckham, Qian (Chayn) Sun**

## **Gis A Computing Perspective Second Edition:**

*Gis* Michael Worboys, Matt Duckham, 2004-05-15 This fully updated new edition of Michael Worboys highly successful book addresses GIS from a computing perspective as opposed to a cartographic geographic or management perspective and highlights the fundamental role played by computing science information systems and IT in the field of GIS It reflects new developments such as the impact the internet has had in terms of distribution and visualization and covers the ever increasing roles of AI uncertainty handling and agent based computing GIS A Computing Perspective is aimed at a wide range of students including those studying computer science information systems and information technology as well as GIS

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

GIS Michael F. Worboys, Matt Duckham, Qian (Chayn) Sun, 2023-08-16 Following two successful editions the third edition of GIS A Computer Perspective has been completely revised and incorporates new chapters Now included are updates of ontologies developments in decentralized computing Volunteered Geographic Information VGI and Knowledge Discovery in Databases KDD The authors have also expanded this edition to include a more thorough treatment of geovisualization and spatial cognition

*GIS Fundamentals* Stephen Wise, 2018-09-03 With GIS technology increasingly available to a wider audience on devices from apps on smartphones to satnavs in cars many people routinely use spatial data in a way which used to be the preserve of GIS specialists However spatial data is stored and analyzed on a computer still tends to be described in academic texts and articles which require specialist knowledge or some training in computer science Developed to introduce computer science literature to geography students GIS Fundamentals Second Edition provides an accessible examination of the underlying principles for anyone with no formal training in computer science See What s New in the Second Edition Coverage of the use of spatial data on the Internet Chapters on databases and on searching large databases for spatial queries Improved coverage on route finding Improved coverage of heuristic approaches to solving real world spatial problems International standards for spatial data The book begins with a

brief but detailed introduction to how computers work and how they are programmed giving anyone with no previous computer science background a foundation to understand the remainder of the book As with all parts of the book there are also suggestions for further sources of reading The book then describes the ways in which vector and raster data can be stored and how algorithms are designed to perform fundamental operations such as detecting where lines intersect From these simple beginnings the book moves into the more complex structures used for handling surfaces and networks and contains a detailed account of what it takes to determine the shortest route between two places on a network The final sections of the book review problems such as the Travelling Salesman problem which are so complex that it is not known whether an optimum solution exists Using clear concise language but without sacrificing technical rigour the book gives readers an understanding of what it takes to produce systems which allow them to find out where to make their next purchase and how to drive to the right place to collect it

*Flexible Databases Supporting Imprecision and Uncertainty*

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

**GIS** M. F. Worboys, 1995 Aims to make the computing principles underlying geographic databases understandable and accessible to current and potential users of such systems

*GIS* Michael F.

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

**CAD and GIS**

**Integration** Hassan A. Karimi, Burcu Akinici, 2009-12-17 When used together effectively computer aided design CAD and geospatial information systems GIS have a solid track record for streamlining decision making and reducing inefficiencies in the design planning and execution of critical operations and projects And a growing number of engineering tasks in numerous fields including design architecture construction and asset management now require the knowledge of many interrelated yet disconnected CAD GIS tools and task specific software A multidisciplinary resource delineating existing and emerging solutions for CAD GIS integration issues CAD and GIS Integration provides a clear understanding of the state of the art in this area of growing importance It brings together in depth descriptions of existing and emerging techniques methodologies and technologies to examine approaches that enable data and operations interoperability between CAD GIS Starting with a review of fundamental concepts and theories the book Addresses contemporary issues and challenges Provides a collection of helpful methodologies techniques and technologies for integrating CAD and GIS Presents balanced

coverage of CAD and GIS technologies and applications Highlights emerging trends in CAD GIS integration Explores the state of the art in the application of CAD and GIS technologies data and operations for decision making From early developments to current trends and future directions this concise resource allows you to get up to speed quickly on what it takes to get the most of these two dynamic technologies Numerous example applications of effective CAD GIS integration provide the understanding needed to improve designs make better decisions and reduce or even eliminate costly errors in your next project

**Modern Accelerator Technologies for Geographic Information Science** Xuan Shi, Volodymyr Kindratenko, Chaowei Yang, 2013-10-27 This book explores the impact of augmenting novel architectural designs with hardware based application accelerators The text covers comprehensive aspects of the applications in Geographic Information Science remote sensing and deploying Modern Accelerator Technologies MAT for geospatial simulations and spatiotemporal analytics MAT in GIS applications MAT in remotely sensed data processing and analysis heterogeneous processors many core and highly multi threaded processors and general purpose processors are also presented This book includes case studies and closes with a chapter on future trends Modern Accelerator Technologies for GIS is a reference book for practitioners and researchers working in geographical information systems and related fields Advanced level students in geography computational science computer science and engineering will also find this book useful Geospatial Services and Applications for the Internet John T. Sample, Kevin Shaw, Shengru Tu, Mahdi Abdelguerfi, 2008-12-10 The use of geospatial technologies has become ubiquitous since the leading Internet vendors delivered a number of popular map websites Today businesses are either migrating location specific capabilities into their information systems or expanding existing Geospatial Information Systems GIS implementation into enterprise wide solutions As enterprise information systems evolve toward service oriented architecture SOA geospatial technologies also evolve along the same lines Geospatial Services and Applications for the Internet covers a wide spectrum of techniques algorithms and modeling methodologies that address the challenges in service oriented architectural design for GIS and intelligent processing for spatial queries This book presents in depth studies on performance improvement data integration service personalization and interoperation between geospatial services These studies provide the reader with a wide spectrum of examples and case studies on the development of GIS for hydrological applications electrical power supply applications land usage and urban planning and NASA s Earth image datasets dissemination Geospatial Services and Applications for the Internet is designed for a professional audience composed of practitioners and researchers in industry This book is also suitable as a secondary text book or reference for advanced level students in computer science and geosciences GIS World ,1997 GIS Fundamentals Paul Bolstad, 2005 *3D Topography* Friso Penninga, 2008 Het gebruik van tetra ders wordt gelegitimeerd door wiskundige voordelen en acceptabele opslagvereisten *Geomatica* ,2009 GIS India ,2007 **A Primer of GIS, First Edition** Francis James Harvey, 2008 This textbook examines the choices considered when creating geographic

representations and cartographic representations transforming spherical coordinates to planar coordinates and modeling geographic data Harvey geography University of Minnesota introduces the three generic options for recording the locations and characteristics of things and events the principles of remote sensing map design elements and geostatistical methods Fifteen color plates are provided in the middle of the book while black and white images are scattered throughout **GIS 2003** Philippe Rigaux (ed),2003 ACSM Bulletin ,2001 Pervasive Computing ,2005 Geographical Information Systems, 2 Volume Set Paul A. Longley,Michael F. Goodchild,David J. Maguire,David W. Rhind,1999-01-25 From a review of the First Edition The book is timely packed with useful background information and thought provoking in its treatment of future prospects the definitive guide to GIS Photogrammetric Engineering Remote Sensing The one stop source for current and comprehensive information on GIS now in a new edition The long awaited Second Edition of Geographical Information Systems brings this definitive reference up to date with the latest developments in GIS techniques and practice Completely restructured and rewritten by a select international team of almost 100 GIS experts it remains the resource of choice for anyone seeking detailed state of the art information on all key aspects of this revolutionary spatial science technology from underlying principles and methodology Volume 1 to management and practical applications Volume 2 Unmatched in scope by any other reference on the subject Geographical Information Systems Second Edition provides crucial background on basic GIS concepts and addresses the radical shifts and changes that have taken place in GIS technology and its uses The new edition comes complete with color illustrations helpful cross referencing plus an extensive bibliography a list of acronyms and more a full range of features that make this landmark resource easier to use than ever Volume 1 offers in depth coverage of key GIS principles and technical issues including Spatial representation spatial distributions and spatial data Data quality error detection and spatial analysis New GIS technology from networked and open GIS to desktop environments Current spatial database management methods Data capture using the latest remote sensing and global positioning system GPS technologies Techniques for transforming and linking geographical data

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### **Gis A Computing Perspective Second Edition Introduction**

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