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# Gpr Data Processing Techniques Home Springer

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**Intelligent Data Sensing and Processing for Health and Well-being Applications** CRC Press  
Civil Engineering Applications of Ground Penetrating RadarSpringer  
Hidden Killers, 1998 Butterworth-Heinemann

Innovation in Near-Surface Geophysics: Instrumentation, Application, and Data Processing Methods offers an advanced look at state-of-the-art and innovative technologies for near surface geophysics, exposing the latest, most effective techniques in an accessible way. By addressing a variety of geophysical applications, including cultural heritage, civil engineering, characteristics of soil, and others, the book

provides an understanding of the best products and methodologies modern near surface geophysics has to offer. It proposes tips for new ideas and projects, and encourages collaboration across disciplines and techniques for the best implementation and results. Clearly organized, with contributions from leaders from throughout geophysics, Innovation in Near-Surface Geophysics is an important guide for geophysicists who hope to gain a better understanding of the tools and techniques available. Addresses a variety of applications in near-surface geophysics, including cultural heritage, civil engineering, soil analysis, etc. Provides insight to available products and techniques and offers suggestions for future developments Clearly organized by techniques and their applications

Department of State Publication BoD – Books on Demand

Includes section "Reviews."

Proceedings of the 8th International Conference on Sciences of Electronics, Technologies of Information and Telecommunications (SETIT ' 18), Vol.2 Cambridge University Press

Intelligent Data Sensing and Processing for Health and Well-being Applications uniquely combines full exploration of the latest

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technologies for sensor-collected intelligence with detailed coverage of real-case applications for healthcare and well-being at home and in the workplace. Forward-thinking in its approach, the book presents concepts and technologies needed for the implementation of today's mobile, pervasive and ubiquitous systems, and for tomorrow ' s IoT and cyber-physical systems. Users will find a detailed overview of the fundamental concepts of gathering, processing and analyzing data from devices disseminated in the environment, as well as the latest proposals for collecting, processing and abstraction of data-sets. In addition, the book addresses algorithms, methods and technologies for diagnosis and informed decision-making for healthcare and well-being. Topics include emotional interface with ambient intelligence and emerging applications in detection and diagnosis of neurological diseases. Finally, the book explores the trends and challenges in an array of areas, such as applications for intelligent monitoring in the workplace for well-being, acquiring data traffic in cities to improve the assistance of first aiders, and applications for supporting the elderly at home. Examines the latest applications and future directions for mobile data sensing in an array of health and well-being scenarios Combines leading computing paradigms and technologies, development applications, empirical studies, and future trends in the multidisciplinary field of smart sensors, smart sensor networks, data analysis and machine intelligence methods Features an analysis of security, privacy and ethical issues in smart sensor health and well-being applications Equips readers interested in interdisciplinary projects in ubiquitous computing or pervasive computing and ambient intelligence with the latest trends and developments

*Bioinformatics* CRC Press

GPR Remote Sensing in Archaeology provides a complete description of the processes needed to take raw GPR data all the way to the construction of subsurface images. The book provides an introduction to the "theory" of GPR by using a simulator that shows how radar profiles across simple model structures look and provides many examples so that the complexity of radar signatures can be understood. It continues with a review of the necessary radargram signal processes needed along with examples. The most comprehensive methodology to construct subsurface images from either coarsely spaced data using interpolation or from dense data from multi-channel equipment and 3D volume generation is presented, advanced imaging solutions such as overlay analysis are introduced, and numerous worldwide site case histories are shown. The authors present their studies in a way that most technical and non-technical users of the equipment will find essentials for implementing in their own subsurface investigations.

**Forensic Archaeology** Springer Science & Business Media  
This book presents the integrated use of magnetometry and ground-penetrating radar geophysical mapping to understand the human presence within buried archaeological landscapes. Ground-penetrating radar can be used to identify buried living surfaces, geological stratigraphy and the architectural remains of sites in three-dimensions. Magnetometry can produce images denoting differences on the composition of those materials, both anthropogenic and natural, but with more limited three-dimensional resolution. The integration of the two has a unique ability to resolve and interpret these buried materials, differentiated between the human-caused and natural layers, and place all buried features within historic landscapes. The final product of geophysical integration, along with some limited subsurface testing, produces a holistic analysis of human

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adaptations to, and modifications of, the ancient landscape. Examples are shown from sites in Roman Croatia and Britain, Medieval Ireland, Colonial Connecticut, and an Archaic site in the Colorado Rocky Mountains. These examples from very different environments, time periods and cultural groups illustrate how the integrated geophysical methodology can interpret, on a scale approaching many hectares, the ancient landscapes within which people lived.

**Hidden Killers, 1998** Springer Science & Business Media  
Seismic attributes play a key role in exploration and exploitation of hydrocarbons. In *Seismic Attributes for Prospect Identification and Reservoir Characterization* (SEG Geophysical Developments No. 11), Satinder Chopra and Kurt J. Marfurt introduce the physical basis, mathematical implementation, and geologic expression of modern volumetric attributes including coherence, dip/azimuth, curvature, amplitude gradients, seismic textures, and spectral decomposition. The authors demonstrate the importance of effective color display and sensitivity to seismic acquisition and processing. Examples from different basins illustrate the attribute expression of tectonic deformation, clastic depositional systems, carbonate depositional systems and diagenesis, drilling hazards, and reservoir characterization. The book is illustrated generously with color figures throughout. "Seismic Attributes" will appeal to seismic interpreters who want to extract more information from data; seismic processors and imagers who want to learn how their efforts impact subtle

stratigraphic and fracture plays; sedimentologists, stratigraphers, and structural geologists who use large 3D seismic volumes to interpret their plays within a regional, basinwide context; and reservoir engineers whose work is based on detailed 3D reservoir models. Copublished with EAGE.

*Proximal Soil Sensing* Springer

This book provides a general introduction to the most important geophysical exploration methods and their application to forensic sciences. It describes physical principles, campaign procedures and processing, as well as interpretation techniques, while also highlighting new acquisition and data analysis procedures. A large section of the book is devoted to applications, from measurements to the interpretation of data. Further, the book shows how to design and perform a forensic survey, and offers guidance on selecting the best method for the problem at hand, and on selecting the best type of data acquisition and processing. Written in straightforward language and chiefly intended as an introductory text for students in several scientific fields, the book also offers a useful guide for specialists who want to expand their expertise in this fascinating discipline.

*Commerce Business Daily* Elsevier

Ground-penetrating radar (GPR) is a rapidly developing field that has seen tremendous progress over the past 15 years. The development of GPR spans aspects of geophysical science, technology, and a wide range of scientific and engineering

applications. It is the breadth of applications that has made GPR such a valuable tool in the geophysical consulting and geotechnical engineering industries, has led to its rapid development, and inspired new areas of research in academia. The topic of GPR has gone from not even being mentioned in geophysical texts ten years ago to being the focus of hundreds of research papers and special issues of journals dedicated to the topic. The explosion of primary literature devoted to GPR technology, theory and applications, has led to a strong demand for an up-to-date synthesis and overview of this rapidly developing field. Because there are specifics in the utilization of GPR for different applications, a review of the current state of development of the applications along with the fundamental theory is required. This book will provide sufficient detail to allow both practitioners and newcomers to the area of GPR to use it as a handbook and primary research reference. \*Review of GPR theory and applications by leaders in the field \*Up-to-date information and references \*Effective handbook and primary research reference for both experienced practitioners and newcomers

#### **Seismic Data Analysis** Springer Nature

A real-world guide to practical applications of groundpenetrating radar (GPR) The nondestructive nature of ground penetrating radar makes it an important and popular method of subsurface imaging, but it is a highly specialized field, requiring a deep understanding of the underlying science for successful application. Introduction to Ground Penetrating Radar: Inverse Scattering and Data Processing provides experienced professionals with the background they need to ensure precise data collection and analysis. Written to build upon the information presented in more general introductory volumes, the book discusses the fundamental mathematical, physical, and engineering

principles upon which GPR is built. Real-world examples and field data provide readers an accurate view of day-to-day GPR use. Topics include: 2D scattering for dielectric and magnetic targets 3D scattering equations and migration algorithms Host medium characterization and diffraction tomography Time and frequency steps in GPR data sampling The Born approximation and the singular value decomposition The six appendices contain the mathematical proofs of all examples discussed throughout the book. Introduction to Ground Penetrating Radar: Inverse Scattering and Data Processing is a comprehensive resource that will prove invaluable in the field.

#### **Sensor Technology for Smart Homes** Elsevier

Using 20 years of data from more than 600 ground-penetrating radar surveys, Lawrence Conyers provides the consumer of GPR studies with basic information on how to read and interpret GPR data for identifying subsurface remains and do cultural analysis.

#### *Civil Engineering Applications of Ground Penetrating Radar* AltaMira Press

There have been major recent advances in robotic systems that can replace humans in undertaking hazardous activities in demanding or dangerous environments. Published in association with the CLAWAR (Climbing and Walking Robots and Associated Technologies Association) ([www.clawar.org](http://www.clawar.org)), this important book reviews the development of robotic systems for de-mining and other risky activities such as fire-fighting. Part one provides an overview of the use of robots for humanitarian de-mining work. Part two discusses the development of sensors for mine detection whilst Part three reviews developments in both teleoperated and autonomous robots. Building on the latter, Part four concentrates on robot autonomous navigation. The final part of the book reviews research on multi-agent-systems (MAS)

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and the multi-robotics-systems (MRS), promising tools that take into account modular design of mobile robots and the use of several robots in multi-task missions. With its distinguished editors and international team of contributors, *Using robots in hazardous environments: landmine detection, de-mining and other applications* is a standard reference for all those researching the use of robots in hazardous environments as well as government and other agencies wishing to use robots for dangerous tasks such as landmine detection and disposal. Reviews the development of robotic systems for de-mining and other risky activities Discusses the development and applications of sensors for mine detection using different robotic systems Examines research on multi-agent-systems and multi-robotics systems

**Trends in GPR and Other NDTs for Transport Infrastructure Assessment** Civil Engineering Applications of Ground Penetrating Radar

Included in this book are practical guidelines for data collection and interpretation, from antennae configurations to sequence stratigraphy, together with new advances such as vertical radar profiles and 3-D GPR imaging for hydrocarbon reservoir modelling, designed to assist new and veteran users get the most from GPR. Case studies in this book detail GPR investigations in a wide array of sedimentary environments including alluvial fans, braided rivers, spits, beaches, sand dunes, lakes, bogs, and floodplains.

Innovation in Near-Surface Geophysics Springer

This book presents the latest theory, developments, and applications related to high resolution materials-penetrating sensor systems. An international team of expert researchers explains the problems and

solutions for developing new techniques and applications. Subject areas include ultrawideband (UWB) signals propagation and scattering, materials-penetrating radar techniques for small object detection and imaging, biolocation using holographic techniques, tomography, medical applications, nondestructive testing methods, electronic warfare principles, through-the-wall radar propagation effects, and target identification through measuring the target return signal spectrum changes.

**GPR Remote Sensing in Archaeology** Geological Society of London

Amerikansk rapport, der beskriver de problemer udlægning af miner i forbindelse med krigsførelse giver overalt i verden. Især civilbefolkningen rammes, fordi de udlagte miner specielt personelminer sjældent ryddes effektivt, når krigshandlerne ophører.

Non-Destructive Testing in Civil Engineering 2000 MDPI

This book reports on developments in Proximal Soil Sensing (PSS) and high resolution digital soil mapping. PSS has become a multidisciplinary area of study that aims to develop field-based techniques for collecting information on the soil from close by, or within, the soil. Amongst others, PSS involves the use of optical, geophysical, electrochemical, mathematical and statistical methods. This volume, suitable for undergraduate course material and postgraduate research, brings together ideas and examples from those developing and using proximal sensors and high resolution digital soil maps for applications such as precision agriculture, soil contamination, archaeology, peri-urban design and high land-value applications, where there is a particular need for high spatial resolution information. The book in particular covers soil sensor sampling, proximal soil sensor

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development and use, sensor calibrations, prediction methods for large data sets, applications of proximal soil sensing, and high-resolution digital soil mapping. Key themes: soil sensor sampling – soil sensor calibrations – spatial prediction methods – reflectance spectroscopy – electromagnetic induction and electrical resistivity – radar and gamma radiometrics – multi-sensor platforms – high resolution digital soil mapping - applications Raphael A. Viscarra Rossel is a scientist at the Commonwealth Scientific and Industrial Research Organisation (CSIRO) of Australia. Alex McBratney is Pro-Dean and Professor of Soil Science in the Faculty of Agriculture Food & Natural Resources at the University of Sydney in Australia. Budiman Minasny is a Senior Research Fellow in the Faculty of Agriculture Food & Natural Resources at the University of Sydney in Australia.

### **Advances in Geophysical Methods Applied to Forensic Investigations** Elsevier

This Special Issue presents the recent advances in sensor technologies for smart homes, including fiber Bragg grating (FBG) sensors for detecting the presence and number of occupants, the Internet of things for monitoring CO<sub>2</sub> concentration, and designing a novel eye-tracking system for monitoring and controlling a smart home, and infrared thermal sensors for fall detection. Such new explorations are pushing the boundary of sensing technologies and, thus, will have more profound implications for the future smart home. Advanced machine learning and data mining algorithms have been proposed to address sensor failure, appliance identification, and human activity recognition in a home environment. These results will enable a promising, sustainable deployment of sensing

technologies. A novel multi-agent gamification system is proposed for managing tasks between household members and between families, which demonstrate another dimension of future smart home application. This Special Issue concludes with a review on sensors for human activity recognition. This work paves the roadmap for deploying smart home systems in different socioeconomic contexts. The whole Special Issue has significantly helped to shape our understanding of the strength, implications, and barriers of deploying long-term, sustainable, sensor technologies for smart homes.

### **Ground Penetrating Radar** MDPI

The Illustrated Wavelet Transform Handbook: Introductory Theory and Applications in Science, Engineering, Medicine and Finance provides an overview of the theory and practical applications of wavelet transform methods. The author uses several hundred illustrations, some in color, to convey mathematical concepts and the results of applications. The first chapter presents a brief overview of the wavelet transform, including a short history. The remainder of the book is split into two parts: the first part discusses the mathematics of both discrete and continuous wavelet transforms while the second part deals with applications in a variety of subject areas, such as geophysics, medicine, fluid turbulence, engineering testing, speech and sound analysis, image analysis, and data compression. These application chapters make the reader aware of the similarities that exist in the use of wavelet transform analysis across disciplines. A comprehensive list of more than 700 references provides a valuable resource for further study. The book is designed specifically for the applied reader in science, engineering, medicine, finance, or any other of the

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growing number of application areas. Newcomers to the subject will find an accessible and clear account of the theory of continuous and discrete wavelet transforms, providing a large number of examples of their use across a wide range of disciplines. Readers already acquainted with wavelets can use the book to broaden their perspective.

#### *Antiquity* BoD – Books on Demand

The first international symposium on NDT-CE (Non-Destructive Testing in Civil Engineering) was held in Berlin, Germany in 1991. Successive symposia were held throughout Europe until 1997. This, the 5th symposium is organized as SEIKEN SYMPOSIUM No. 26, and is sponsored by the Institute of Industrial Science, at the University of Tokyo, Japan. Original objectives of the NDT-CE symposium have been to provide an opportunity for discussing current issues and future perspectives of NDT and for promoting mutual understanding among engineers and researchers. Asia is one of the key regions for further development in NDT and this symposium in Japan will be a good opportunity not only to exchange technical information on NDT, but to promote worldwide friendship between engineers in Asian countries and other nations of the world. This volume contains 70 papers providing the most recent research results and findings. The papers are grouped under the following areas: (1) keynote papers, (2) magnetic / electric, (3) steel structures, (4) integrated test, (5) moisture, (6) strength, (7) acoustic emission, (8) various tests, (9) ultrasonic, (10) impact echo, (11) radar, (12) quality and (13) corrosion / cover.

#### Using Robots in Hazardous Environments Academic Press

This book is a printed edition of the Special Issue "Trends in GPR and other NDTs for Transport Infrastructure Assessment" that was published in Remote Sensing. This compilation of papers has been published to offer an extensive up-to-date overview of the state-of-the-art research activities in the

challenging field of applying Ground-Penetrating Radar (GPR) and other nondestructive testing (NDT) methods for the assessment of transport infrastructure. New findings are addressed in 12 original research papers and 1 review paper, including various subjects such as pavements, railways, bridges, tunnels, and retaining walls. The best practices, troubleshooting, and future perspectives of the method for infrastructure inspection are also discussed in this reprint.