An Approach To Automatic Road Vectorization Of Raster Maps

CINDY LUCAS

Radar Remote Sensing of Urban Areas World Scientific
This book is a printed edition of the Special Issue "Forest Operations, Engineering and Management" that was published in Forests
Advances in Artificial Intelligence and Security Springer Nature
This book reviews and summarizes the development and achievement in cartography and geographic information engineering in China over the past 60 years after the founding of the People's Republic of China. It comprehensively reflects cartography, as a traditional discipline, has almost the same long history with the world's first culture and has experienced extraordinary and great changes. The book consists of nineteen thematic chapters. Each chapter is in accordance with the unified directory structure, introduction, development process, major study achievements, problem and prospect, representative works, as well as a lot of references. It is useful as a reference both for scientists and technicians who are engaged in teaching, researching and engineering of cartography and geographic information engineering.
Swarm, Evolutionary, and Memetic Computing Springer
This dual conception of remote sensing brought us to the idea of preparing two different books; in addition to the first book which displays recent advances in remote sensing applications, this book is devoted to new techniques for data processing, sensors and platforms. We do not intend this book to cover all aspects of remote sensing techniques and platforms, since it would be an impossible task for a single volume. Instead, we have collected a number of high-quality, original and representative contributions in those areas.
Computer Vision - ECCV'98 Springer Nature
Advancements in digital sensor technology, digital image analysis techniques, as well as computer software and hardware have brought together the fields of computer vision and photogrammetry, which are now converging towards sharing, to a great extent, objectives and algorithms. The potential for mutual benefits by the close collaboration and interaction of these two disciplines is great, as photogrammetric know-how can be aided by the most recent image analysis developments in computer vision, while modern quantitative photogrammetric approaches can support computer vision activities. Devising methodologies for automating the extraction of man-made objects (e.g. buildings, roads) from digital aerial or satellite imagery is an application where this cooperation and mutual support is already reaping benefits. The valuable spatial information collected using these interdisciplinary techniques is of improved qualitative and quantitative accuracy. This book offers a comprehensive selection of high-quality and in-depth contributions from world-wide leading research institutions, treating theoretical as well as implementational issues, and representing the state-of-the-art on this subject among the photogrammetric and computer vision communities.
Proceedings of 4th International Conference on Artificial Intelligence and Smart Energy Springer
In a large majority of regions where forestry activities occur, roads are the backbone of their efficient management. Automatic planning of a road network is an ongoing, challenging task.

Advances have been aided by the increased availability and accuracy of digital terrain models, greater computing power, and improvements in optimization techniques. Defining the objectives and deriving adequate objective functions are crucial steps in guiding the solution toward an ideal network, especially when individual goals may conflict. For example, whereas the conservationist might prefer that a layout minimizes any detrimental impacts on the environment, the forest landowner may favor cost-minimal roads while the forest operator would like to have a dense network in order to reduce transportation costs.This thesis introduces models for three objective functions: - forest road construction and maintenance costs, - negative ecological effects from such roads, - the suitability, or attractiveness, of a network for cable-yarding.Case studies in mountainous project areas illustrate the trade-offs among these conflicting goals, and demonstrate how to optimize different objectives in order to make an optimal decision overall.

Decision-making Strategies for Automated Driving in Urban Environments Springer Science & Business Media

The growing market penetration of Internet mapping, satellite imaging and personal navigation has opened up great research and business opportunities to geospatial communities. Multi-platform and multi-sensor integrated mapping technology has clearly established a trend towards fast geospatial data acquisition. Sensors can be mounted on various pla

Citizen Empowered Mapping Springer Nature

This volume constitutes the refereed proceedings of the 5th Iberian Conference on Pattern Recognition and Image Analysis, IbPRIA 2011, held in Las Palmas de Gran Canaria, Spain, in June 2011. The 34 revised full papers and 58 revised poster papers presented were carefully reviewed and selected from 158 submissions. The papers are organized in topical sections on computer vision; image processing and analysis; medical applications; and pattern recognition.

Remote Sensing Springer Nature

This volume constitutes the thoroughly refereed post-conference proceedings of the 6th International Conference on Swarm, Evolutionary, and Memetic Computing, SEMCCO 2015, held in Hyderabad, India, in December 2015. The 23 full papers presented in this volume were carefully reviewed and selected from 40 submissions for inclusion in the proceedings. The papers cover a wide range of topics in swarm, evolutionary, memetic and other intelligent computing algorithms and their real world applications in problems selected from diverse domains of science and engineering.

Proceedings of International Conference on Intelligent Vision and Computing (ICIVC 2023) Springer Nature

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.

Pattern Recognition and Image Analysis Springer Nature

The very significant advances in computer vision and pattern recognition and their applications in the last few years reflect the strong and growing interest in the field as well as the many opportunities and challenges it offers. The second edition of this handbook represents both the latest progress and updated knowledge in this dynamic field. The applications and technological issues are particularly emphasized in this edition to reflect the wide applicability of the field in many practical problems. To keep the book in a single volume, it is not possible to retain all chapters of the first edition. However, the chapters of both editions are well written for permanent reference. This indispensable handbook will continue to serve as an authoritative and comprehensive guide in the field.

IoT Sensors, ML, AI and XAI: Empowering A Smarter World Springer Science & Business Media

This two-volume set LNCS 12212 and 12213 constitutes the refereed proceedings of the Second International Conference on HCI in Mobility, Transport, and Automotive Systems, MobiTAS 2020, held as part of the 22nd International Conference on Human-Computer Interaction, HCII 2020, in Copenhagen, Denmark, in July, 2020.* A total of 1439 full papers and 238 posters have been carefully reviewed and accepted for publication in HCII 2020. The papers cover the entire field of human-computer interaction, addressing major advances in knowledge and effective use of computers in a variety of application areas. MobiTAS 2020 includes a total of 59 papers and they are organized in the following topical sections: Part I, Automated Driving and In-Vehicle Experience Design: UX topics in automated driving, and designing in-vehicle experiences. Part II, Driving Behavior, Urban and Smart Mobility: studies on driving behavior, and urban and smart mobility. *The conference was held virtually due to the COVID-19 pandemic.

Railway Age World Scientific

Recently, growing interest in the use of remote sensing imagery has appeared to provide synoptic maps of water quality parameters in coastal and inner water ecosystems;, monitoring of complex land ecosystems for biodiversity conservation; precision agriculture for the management of soils, crops, and pests; urban planning; disaster monitoring, etc. However, for these maps to achieve their full potential, it is important to engage in periodic monitoring and analysis of multi-temporal changes. In this context, very high resolution (VHR) satellite-based optical, infrared, and radar imaging instruments provide reliable information to implement spatially-based conservation actions. Moreover, they enable observations of parameters of our environment at greater broader spatial and finer temporal scales than those allowed through field observation alone. In this sense, recent very high resolution satellite technologies and image processing algorithms present the opportunity to develop quantitative techniques that have the potential to improve upon traditional techniques in terms of cost, mapping fidelity, and objectivity. Typical applications include multi-temporal classification, recognition and tracking of specific patterns, multisensor data fusion, analysis of land/marine ecosystem processes and environment monitoring, etc. This book aims to collect new developments, methodologies, and applications of very high resolution satellite data for remote sensing. The works selected provide to the research community the most recent advances on all aspects of VHR satellite remote sensing.

Data Driven Methods for Civil Structural Health Monitoring and Resilience BoD – Books on Demand

Structure from Motion with Multi View Stereo provides hyperscale landform models using images acquired from standard compact cameras and a network of ground control points. The technique is not limited in temporal frequency and can provide point cloud data comparable in density and accuracy to those generated by terrestrial and airborne laser scanning at a fraction of the cost. It therefore offers exciting opportunities to characterise surface topography in unprecedented detail and, with multi-temporal data, to detect elevation, position and volumetric changes that are symptomatic of earth surface processes. This book firstly places Structure from Motion in the context of other digital surveying methods and details the Structure from Motion workflow including available software packages and assessments of uncertainty and accuracy. It then critically reviews current usage of Structure from Motion in the geosciences, provides a synthesis of recent validation studies and looks to the future by highlighting opportunities arising from developments in allied disciplines. This book will appeal to academics, students and industry professionals because it balances technical knowledge of the Structure from Motion workflow with practical guidelines for image acquisition, image processing and data quality assessment and includes case studies that have been contributed by experts from around the world.

Intelligent Data Engineering and Automated Learning – IDEAL 2016 Transportation Research Board

Earth Observation interacts with space, remote sensing, communication, and information technologies, and plays an increasingly significant role in Earth related scientific studies, resource management, homeland security, topographic mapping, and development of a healthy, sustainable environment and community. Geospatial Technology for Earth Observation provides an in-depth and broad collection of recent progress in Earth observation. Contributed by leading experts in this field, the book covers satellite, airborne and ground remote sensing systems and system integration, sensor orientation, remote sensing physics, image classification and analysis, information extraction, geospatial service, and various application topics, including cadastral mapping, land use change evaluation, water environment monitoring, flood mapping, and decision making support. Geospatial Technology for Earth Observation serves as a valuable training source for researchers, developers, and practitioners in geospatial science and technology industry. It is also suitable as a reference book for upper level college students and graduate students in geospatial technology, geosciences, resource management, and informatics.

Forest Operations, Engineering and Management Springer Science & Business Media

The current economic crisis is cutting the automotive sector to the quick. Public authorities worldwide are now faced with requests for providing loans and accepting guarantees and even for putting large automotive companies under state control. Assessing the long-term benefits of such help and wei- ing the needs of different sectors against each other poses a major challenge for the national policies. Given the upcoming change of customer preferences and state regulations towards safety, sustainability and comfort of a car, the automotive industry is particularly called to prove its ability to make nec- sary innovations available in order to accelerate its pace to come out of the crisis. Consequently the Green Car is assuming a prominent role in the current debate. Various power train concepts are currently under discussion for the Green Car including extremely optimised internal combustion engines, hybrid drives and battery-electric traction. Electrical cars are the most appealing option because they are free of local emissions and provide the opportunity to use primary energy from sources other than crude oil for transport. Well to wheel analysis show that their green-house gas emissions can be rated negligibly small if electricity from renewable sources like wind and solar is used.

Geospatial Technology for Earth Observation Springer Nature

At head of title: National Cooperative Highway Research Program.

Autonomous Driving Perception Springer Nature

This book describes an effective decision-making and planning architecture for enhancing the navigation capabilities of automated vehicles in the presence of non-detailed, open-source maps. The system involves dynamically obtaining road corridors from map information and utilizing a camera-based lane detection system to update and enhance the navigable space in order to address the issues of intrinsic uncertainty and low-fidelity. An efficient and human-like local planner then determines, within a probabilistic framework, a safe motion trajectory, ensuring the continuity of the path curvature and limiting longitudinal and lateral accelerations. LiDAR-based perception is then used to identify the driving scenario, and subsequently re-plan the trajectory, leading in some cases to adjustment of the high-level route to reach the given destination. The method has been validated through extensive theoretical and experimental analyses, which are reported here in detail.

Geomatica Springer Nature

The 18 full and 13 short papers presented were carefully reviewed and selected from 255 submissions. There were organized in topical sections named: Image Processing, Pattern Analysis and Machine Vision; Information and Data Convergence; Disruptive Technologies for Future; E-Governance and Smart World

Innovations in Computational Intelligence and Computer Vision MDPI

This book surveys the history of automatic vehicle guidance based on the processing of visual information, starting from the very first projects worldwide up to the latest developments. It also presents the ARGO prototype vehicle, developed at the University of Parma (Italy), and describes its equipment, setup, and performance. ARGO has been equipped with cameras and processing systems to drive autonomously in real traffic conditions. The complete system has been tested on public roads, during a tour in which ARGO drove itself along the Italian highway network for more than 2000 km. A detailed analysis of this trip is also included.

Railway Signal Engineer Springer

This book aims to promote the core understanding of a proper modelling of road traffic accidents by deep learning methods using traffic information and road geometry delineated from laser scanning data. The first two chapters of the book introduce the reader to laser scanning technology with creative explanation and graphical illustrations, review and recent methods of extracting geometric road parameters. The next three chapters present different machine learning and statistical techniques applied to extract road geometry information from laser scanning data. Chapters 6 and 7 present methods for modelling roadside features and automatic road geometry identification in vector data. After that, this book goes on reviewing methods used for road traffic accident modelling including accident frequency and injury severity of the traffic accident (Chapter 8). Then, the next chapter explores the details of neural networks and their performance in predicting the traffic accidents along with a comparison with common data mining models. Chapter 10 presents a novel hybrid model combining extreme gradient boosting and deep neural networks for predicting injury severity of road traffic accidents. This chapter is followed by deep learning applications in modelling accident data using feed-forward, convolutional, recurrent neural network models (Chapter 11). The final chapter (Chapter 12) presents a procedure for modelling traffic accident with little data based on the concept of transfer learning. This book aims to help graduate students, professionals, decision makers, and road planners in developing better traffic accident prediction models using advanced neural networks.