

1. Record Nr.	UNINA9910787270903321
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Titolo	View-based 3-D object retrieval / / Yue Gao, Qionghai Dai
Pubbl/distr/stampa	Amsterdam, Netherlands : , : Elsevier, , 2015 ©2015
ISBN	0-12-802623-5 0-12-802419-4
Edizione	[1st edition]
Descrizione fisica	1 online resource (154 p.)
Collana	Computer Science Reviews and Trends
Disciplina	006.37
Soggetti	Image processing - Data processing Pattern recognition systems - Quality control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Front Cover; View-Based 3-D Object Retrieval; Copyright; Contents; Acknowledgments; Preface; Part I: The Start; Chapter 1: Introduction; 1.1 The Definition of 3DOR; 1.2 Model-Based 3DOR Versus View-Based 3DOR; 1.3 The Challenges of V3DOR; 1.4 Summary of Our Work; 1.4.1 View Extraction; 1.4.2 Representative View Selection; 1.4.3 Learning the Weights for Multiple Views; 1.4.4 Distance Measures for Object Matching; 1.4.5 Learning the Relevance Among 3-D Objects; 1.5 Structure of This Book; 1.6 Summary; References; Chapter 2: The Benchmark and Evaluation; 2.1 Introduction 2.2 The Standard Benchmarks 2.3 The Shape Retrieval Contest; 2.4 Evaluation Criteria in 3DOR; 2.5 Summary; References; Part II View Extraction, Selection, and Representation; Chapter 3: View Extraction; 3.1 Introduction; 3.2 Dense Sampling Viewpoints; 3.3 Predefined Camera Array; 3.4 Generated View; 3.5 Summary; References; Chapter 4: View Selection; 4.1 Introduction; 4.2 Unsupervised View Selection; 4.3 Interactive View Selection; 4.3.1 Multiview 3-D Object Matching; 4.3.2 View Clustering; 4.3.3 Initial Query View Selection; 4.3.4 Interactive View Selection with User Relevance Feedback 4.3.5 Learning a Distance Metric 4.3.6 Multiple Query Views Linear Combination; 4.3.7 The Computational Cost; 4.4 Summary; References; Chapter 5: View Representation; 5.1 Introduction; 5.2 Shape Feature

Extraction; 5.2.1 Zernike Moments; 5.2.2 Fourier Descriptor; 5.3 The Bag-of-Visual-Features Method; 5.3.1 The Bag-of-Visual-Words; 5.3.2 The Bag-of-Region-Words; 5.4 Learning the Weights for Multiple Views; 5.4.1 K-Partite Graph Reinforcement; 5.4.2 Weight Learning for Multiple Views Using the k-Partite Graph; 5.5 Summary; References; Part III View-Based 3-D Object Comparison

Chapter 6: Multiple-View Distance Metric 6.1 Introduction; 6.2 Fundamental Many-to-Many Distance Measures; 6.3 Bipartite Graph Matching; 6.3.1 View Selection and Weighting; 6.3.2 Bipartite Graph Construction; 6.3.3 Bipartite Graph Matching; 6.4 Statistical Matching; 6.4.1 Adaptive View Clustering; 6.4.2 CCFV; 6.4.2.1 View Clustering and Query Model Training; 6.4.2.2 Positive and Negative Matching Models; 6.4.2.3 Calculation of the Similarity Between  $Q$  and  $O$   $S(Q, O)$ ; 6.4.2.4 Analysis of Computational Cost; 6.4.3 Markov Chain; 6.4.4 Gaussian Mixture Model Formulation

6.4.4.1 Conventional GMM Training; 6.4.4.2 Generative Adaptation of GMM; 6.4.4.3 Discriminative Adaptation of GMM; 6.4.4.4 Learning the Weights for Multiple GMMs; 6.5 Summary; References; Chapter 7: Learning-Based 3-D Object Retrieval; 7.1 Introduction; 7.2 Learning Optimal Distance Metrics; 7.2.1 Hausdorff Distance Learning; 7.2.2 Learning Bipartite Graph Optimal Matching; 7.3 3-D Object Relevance Estimation via Hypergraph Learning; 7.3.1 Hypergraph and Its Applications; 7.3.2 Learning on Single Hypergraph; 7.3.3 Learning on Multiple Hypergraphs

7.3.4 Learning the Weights for Multiple Hypergraphs

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## Sommario/riassunto

Content-based 3-D object retrieval has attracted extensive attention recently and has applications in a variety of fields, such as, computer-aided design, tele-medicine, mobile multimedia, virtual reality, and entertainment. The development of efficient and effective content-based 3-D object retrieval techniques has enabled the use of fast 3-D reconstruction and model design. Recent technical progress, such as the development of camera technologies, has made it possible to capture the views of 3-D objects. As a result, view-based 3-D object retrieval has become an essential but challenging res

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2. Record Nr.	UNINA9910962221303321
Autore	Chau K. W.
Titolo	Modelling for Coastal Hydraulics and Engineering / / K. W. Chau
Pubbl/distr/stampa	Boca Raton, FL : , : CRC Press, , 2014
ISBN	9786612569050 9781498717960 1498717969 9780429182921 0429182929 9781482266467 1482266466 9781282569058 1282569058 9780203884768 0203884760
Edizione	[First edition.]
Descrizione fisica	1 online resource (240 p.)
Disciplina	627 627/.580151
Soggetti	Coastal engineering - Mathematics Coastal engineering - Data processing Hydraulic engineering - Mathematics Coasts - Computer simulation Coast changes - Mathematical models
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Book Cover; Title; Copyright; Contents; 1 Introduction; 2 Coastal modelling; 3 Conventional modelling techniques for coastal engineering; 4 Finite difference methods; 5 Finite element methods; 6 Soft computing techniques; 7 Artificial neural networks; 8 Fuzzy inference systems; 9 Evolutionary algorithms; 10 Knowledge-based systems; 11 Conclusions; References; Index
Sommario/riassunto	"Mechanistic models are often employed to simulate processes in

coastal environments. However, these predictive tools are highly specialized, involve certain assumptions and limitations, and can be manipulated only by experienced engineers who have a thorough understanding of the underlying principles. This results in significant constraints on their manipulation as well as large gaps in understanding and expectations between the developers and users of a model. Recent advancements in soft computing technologies make it possible to integrate machine learning capabilities into numerical modelling systems in order to bridge the gaps and lessen the demands on human experts. This book reviews the state-of-the-art in conventional coastal modelling as well as in the increasingly popular integration of various artificial intelligence technologies into coastal modelling. Conventional hydrodynamic and water quality modelling techniques comprise finite difference and finite element methods. The novel algorithms and methods include knowledge-based systems, genetic algorithms, artificial neural networks, and fuzzy inference systems. Different soft computing methods contribute towards accurate and reliable prediction of coastal processes. Combining these techniques and harnessing their benefits has the potential to make extremely powerful modelling tools."--Provided by publisher.

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