

1. Record Nr.	UNINA99111140048903321
Titolo	Mathematics and computation in imaging science and information processing // editors Say Song Goh, Amos Ron, Zuowei Shen
Pubbl/distr/stampa	New Jersey, : World Scientific, c2007
ISBN	9786611918705 9781281918703 1281918709 9789812709066 9812709061
Edizione	[1st ed.]
Descrizione fisica	1 online resource (276 p.)
Collana	Lecture notes series, Institute for Mathematical Sciences, National University of Singapore ; ; v. 11
Altri autori (Persone)	GohSay Song RonAmos ShenZuowei
Disciplina	621.36/7
Soggetti	Image processing - Mathematical models Image processing - Data processing Electronic data processing - 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.
Nota di contenuto	CONTENTS; Foreword; Preface; Subdivision on Arbitrary Meshes: Algorithms and Theory Denis Zorin; 1. Introduction; 1.1. Subdivision in computer graphics and geometric modeling; 2. Basics; 2.1. Subdivision curves; 2.2. Subdivision surfaces; 3. Overview of Subdivision Schemes; 3.1. Classification of subdivision schemes; 3.2. Loop scheme; 3.3. Catmull-Clark scheme; 4. Modified Buttery Scheme; 4.1. Doo-Sabin scheme; 4.2. Midedge scheme and other non-integer arity schemes; 4.3. Comparison; 5. Smoothness of Subdivision Surfaces; 5.1. Cr-continuity and tangent plane continuity 5.2. Universal surfaces5.3. Sufficient smoothness criteria; 6. Approximation Properties of Subdivision Surfaces; 6.1. Functional spaces on surfaces; 6.2. Manifold structure defined by subdivision; 7. Conclusions; References; High Order Numerical Methods for Time Dependent Hamilton-Jacobi Equations Chi-Wang Shu; 1. Introduction

and Properties of Hamilton-Jacobi Equations; 2. First Order Monotone Schemes; 2.1. Monotone schemes on structured rectangular meshes; 2.2. Monotone schemes on unstructured meshes; 3. High Order ENO and WENO Schemes on Structured Rectangular Meshes 3.1. High order ENO schemes 3.2. High order WENO schemes; 4. High Order WENO Schemes on Unstructured Meshes; 5. High Order Discontinuous Galerkin Schemes on Unstructured Meshes; 6. High Order Strong Stability Preserving Runge-Kutta Time Discretizations; 7. A Few Numerical Examples; 8. Concluding Remarks; References; Theory and Computation of Variational Image Deblurring Tony F. Chan and Jianhong Shen; 1. Mathematical Models of Blurs; 1.1. Linear blurs; 1.2. The DC-condition; 1.3. Nonlinear blurs; 2. Illposedness of Deblurring; 3. Tikhonov and Bayesian Regularization 4. Optimal Wiener Filtering for Non-Blind Deblurring 4.1. 2-D stochastic spatial signals; 4.2. Stochastic signals as random generalized functions; 4.3. Filtering-based deblurring; 4.4. Optimal Wiener Filtering; 4.5. Connection to the Bayesian/Tikhonov method; 5. Deblurring Blurred BV Images; 5.1. TV deblurring by Rudin, Osher, and Fatemi; 5.2. Dealing with bounded image domains; 5.3. Existence and uniqueness; 5.4. Computation and examples; 6. Parametric Blind Deblurring; 6.1. Parametric modeling; 6.2. The AM algorithm; 7. Non-Parametric Blind Deblurring: Double-BV Model 7.1. General formulation of blind deblurring 7.2. Double-BV blind deblurring model of Chan and Wong; 7.3. On the uniqueness: Hidden symmetries; 7.4. The existence theorem; 8. Deblurring Besov Images via Iterated Shrinkage; 8.1. Wavelets and Besov images; 8.2. Besov image deblurring via iterated shrinkage; 8.3. Understanding the iterated-shrinkage algorithm; 8.3.1. As semi-implicit time marching; 8.3.2. Via augmentation and auxiliary variables; 9. Further Reading; Acknowledgements; References; Data Hiding - Theory and Algorithms Pierre Moulin and Ralf Koetter; 1. Introduction 2. Model for Data Hiding

Sommario/riassunto

The explosion of data arising from rapid advances in communication, sensing and computational power has concentrated research effort on more advanced techniques for the representation, processing, analysis and interpretation of data sets. In view of these exciting developments, the program "Mathematics and Computation in Imaging Science and Information Processing" was held at the Institute for Mathematical Sciences, National University of Singapore, from July to December 2003 and in August 2004 to promote and facilitate multidisciplinary research in the area. As part of the program, a series