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Collana	Advances in computer vision and pattern recognition
Altri autori (Persone)	CriminisiAntonio <1972-> ShottonJ
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Overview and Scope -- Notation and Terminology -- Part I: The Decision Forest Model -- Introduction -- Classification Forests -- Regression Forests -- Density Forests -- Manifold Forests -- Semi-Supervised Classification Forests -- Part II: Applications in Computer Vision and Medical Image Analysis -- Keypoint Recognition Using Random Forests and Random Ferns -- Extremely Randomized Trees and Random Subwindows for Image Classification, Annotation, and Retrieval -- Class-Specific Hough Forests for Object Detection -- Hough-Based Tracking of Deformable Objects -- Efficient Human Pose Estimation from Single Depth Images -- Anatomy Detection and Localization in 3D Medical Images -- Semantic Texton Forests for Image Categorization and Segmentation -- Semi-Supervised Video Segmentation Using Decision Forests -- Classification Forests for Semantic Segmentation of Brain Lesions in Multi-Channel MRI -- Manifold Forests for Multi-Modality Classification of Alzheimer's Disease -- Entangled Forests and Differentiable Information Gain Maximization -- Decision Tree Fields -- Part III: Implementation and Conclusion -- Efficient Implementation of Decision Forests -- The

Sherwood Software Library -- Conclusions.

Sommario/riassunto

Decision forests (also known as random forests) are an indispensable tool for automatic image analysis. This practical and easy-to-follow text explores the theoretical underpinnings of decision forests, organizing the vast existing literature on the field within a new, general-purpose forest model. A number of exercises encourage the reader to practice their skills with the aid of the provided free software library. An international selection of leading researchers from both academia and industry then contribute their own perspectives on the use of decision forests in real-world applications such as pedestrian tracking, human body pose estimation, pixel-wise semantic segmentation of images and videos, automatic parsing of medical 3D scans, and detection of tumors. The book concludes with a detailed discussion on the efficient implementation of decision forests. Topics and features: With a foreword by Prof. Yali Amit and Prof. Donald Geman, recounting their participation in the development of decision forests Introduces a flexible decision forest model, capable of addressing a large and diverse set of image and video analysis tasks Investigates both the theoretical foundations and the practical implementation of decision forests Discusses the use of decision forests for such tasks as classification, regression, density estimation, manifold learning, active learning and semi-supervised classification Includes exercises and experiments throughout the text, with solutions, slides, demo videos and other supplementary material provided at an associated website Provides a free, user-friendly software library, enabling the reader to experiment with forests in a hands-on manner With its clear, tutorial structure and supporting exercises, this text will be of great value to students wishing to learn the basics of decision forests, researchers wanting to become more familiar with forest-based learning, and practitioners interested in exploring modern and efficient image analysis techniques. Dr. A. Criminisi and Dr. J. Shotton are Senior Researchers in the Computer Vision Group at Microsoft Research Cambridge, UK.