Information Theory in Computer Vision and Pattern Recognition

By Francisco Escolano

Springer-Verlag Gmbh Jul 2009, 2009. Buch. Book Condition: Neu. 235x155x28 mm. Neuware - Information Theory (IT) can be highly effective for formulating and designing algorithmic solutions to many problems in Computer Vision and Pattern Recognition (CVPR). This text introduces and explores the measures, principles, theories, and entropy estimators from IT underlying modern CVPR algorithms, providing comprehensive coverage of the subject through an incremental complexity approach. The authors formulate the main CVPR problems and present the most representative algorithms. In addition, they highlight interesting connections between elements of IT when applied to different problems, leading to the development of a basic research roadmap (the ITinCVPR tube). The result is a novel tool, unique in its conception, both for CVPR and IT researchers, which is intended to contribute as much as possible to a cross-fertilization of both areas. Topics and features: Introduces contour and region-based image segmentation in computer vision, covering Jensen-Shannon divergence, the maximum entropy principle, the minimum description length (MDL) principle, and discriminative-generative approaches to segmentation Explores problems in image and pattern clustering, discussing Gaussian mixtures, information bottleneck, robust information clustering, and IT-based mean-shift, as well as strategies to form clustering ensembles Includes a selection of problems at the end...

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