1. Record Nr. UNINA9910465307503321

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Titolo	A Practical Introduction to Computer Vision with OpenCV [[electronic resource]]
Pubbl/distr/stampa	Hoboken, : Wiley, 2014
ISBN	1-118-84873-X
Edizione	[1st edition]
Descrizione fisica	1 online resource (235 p.)
Disciplina	006.3/7 006.37
Soggetti	Computer vision -- Computer programs Computer vision Computer vision - Computer programs Engineering & Applied Sciences Applied Physics Electronic books.
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	A Practical Introduction to Computer Vision with OpenCV; Contents; Preface; 1 Introduction; 1.1 A Difficult Problem; 1.2 The Human Vision System; 1.3 Practical Applications of Computer Vision; 1.4 The Future of Computer Vision; 1.5 Material in This Textbook; 1.6 Going Further with Computer Vision; 2 Images; 2.1 Cameras; 2.1.1 The Simple Pinhole Camera Model; 2.2 Images; 2.2.1 Sampling; 2.2.2 Quantisation; 2.3 Colour Images; 2.3.1 Red-Green-Blue (RGB) Images; 2.3.2 Cyan-Magenta-Yellow (CMY) Images; 2.3.3 YUV Images; 2.3.4 Hue Luminance Saturation (HLS) Images; 2.3.5 Other Colour Spaces 2.3.6 Some Colour Applications2.4 Noise; 2.4.1 Types of Noise; 2.4.2 Noise Models; 2.4.3 Noise Generation; 2.4.4 Noise Evaluation; 2.5 Smoothing; 2.5.1 Image Averaging; 2.5.2 Local Averaging and Gaussian Smoothing; 2.5.3 Rotating Mask; 2.5.4 Median Filter; 3 Histograms; 3.1 1D Histograms; 3.1.1 Histogram Smoothing; 3.1.2 Colour Histograms; 3.2 3D Histograms; 3.3 Histogram/Image Equalisation; 3.4 Histogram Comparison; 3.5 Back-projection; 3.6 k-means Clustering; 4 Binary Vision; 4.1 Thresholding; 4.1.1 Thresholding Problems; 4.2 Threshold

Detection Methods; 4.2.1 Bimodal Histogram Analysis
4.2.2 Optimal Thresholding4.2.3 Otsu Thresholding; 4.3 Variations on Thresholding; 4.3.1 Adaptive Thresholding; 4.3.2 Band Thresholding; 4.3.3 Semi-thresholding; 4.3.4 Multispectral Thresholding; 4.4 Mathematical Morphology; 4.4.1 Dilation; 4.4.2 Erosion; 4.4.3 Opening and Closing; 4.4.4 Grey-scale and Colour Morphology; 4.5 Connectivity; 4.5.1 Connectedness: Paradoxes and Solutions; 4.5.2 Connected Components Analysis; 5 Geometric Transformations; 5.1 Problem Specification and Algorithm; 5.2 Affine Transformations; 5.2.1 Known Affine Transformations; 5.2.2 Unknown Affine Transformations 5.3 Perspective Transformations5.4 Specification of More Complex Transformations; 5.5 Interpolation; 5.5.1 Nearest Neighbour Interpolation; 5.5.2 Bilinear Interpolation; 5.5.3 Bi-Cubic Interpolation; 5.6 Modelling and Removing Distortion from Cameras; 5.6.1 Camera Distortions; 5.6.2 Camera Calibration and Removing Distortion; 6 Edges; 6.1 Edge Detection; 6.1.1 First Derivative Edge Detectors; 6.1.2 Second Derivative Edge Detectors; 6.1.3 Multispectral Edge Detection; 6.1.4 Image Sharpening; 6.2 Contour Segmentation; 6.2.1 Basic Representations of Edge Data; 6.2.2 Border Detection
6.2.3 Extracting Line Segment Representations of Edge Contours6.3 Hough Transform; 6.3.1 Hough for Lines; 6.3.2 Hough for Circles; 6.3.3 Generalised Hough; 7 Features; 7.1 Moravec Corner Detection; 7.2 Harris Corner Detection; 7.3 FAST Corner Detection; 7.4 SIFT; 7.4.1 Scale Space Extrema Detection; 7.4.2 Accurate Keypoint Location; 7.4.3 Keypoint Orientation Assignment; 7.4.4 Keypoint Descriptor; 7.4.5 Matching Keypoints; 7.4.6 Recognition; 7.5 Other Detectors; 7.5.1 Minimum Eigenvalues; 7.5.2 SURF; 8 Recognition; 8.1 Template Matching; 8.1.1 Applications; 8.1.2 Template Matching Algorithm
8.1.3 Matching Metrics

Sommario/riassunto

Explains the theory behind basic computer vision and provides a bridge from the theory to practical implementation using the industry standard OpenCV libraries Computer Vision is a rapidly expanding area and it is becoming progressively easier for developers to make use of this field due to the ready availability of high quality libraries (such as OpenCV 2). This text is intended to facilitate the practical use of computer vision with the goal being to bridge the gap between the theory and the practical implementation of computer vision. The book will explain how to use the re

2. Record Nr. UNINA9910970994003321

Titolo	Partnerships for solid-state lighting : report of a workshop / / Charles W. Wessner, editor ; Board on Science, Technology, and Economic Policy, Policy and Global Affairs, National Research Council
Pubbl/distr/stampa	Washington, D.C., : National Academy Press, c2002
ISBN	0-309-16921-6 1-280-18458-2 9786610184583 0-309-50664-6
Edizione	[1st ed.]
Descrizione fisica	1 online resource (142 p.)
Collana	Government-industry partnerships for the development of new technologies Partnerships for solid-state lighting
Altri autori (Persone)	WessnerCharles W
Disciplina	621.32
Soggetti	Light emitting diodes Lighting Cooperative industrial research - United States Technology and state - United States Technological innovations - Government policy - United States
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 (p. 118-120).
Nota di contenuto	""Front Matter""; ""Reports in the Series""; ""Contents""; ""Preface""; ""Introduction""; ""Welcome""; ""Introduction""; ""A New Illumination Paradigm I""; ""A New Illumination Paradigm II""; ""Panel I: National Goals and Laboratory Contributions""; ""Panel II: LED Lights: Emerging Opportunities""; ""Panel III: Organic Light Emitting Diodes""; ""Panel IV: Solid-State Lighting Roundtable""; ""Appendix A: Speaker Biographies""; ""Appendix B: Participant List* March 2001 Conference""; ""Appendix C: Bibliography""
Sommario/riassunto	As part of its analysis of public-private partnerships, the Academies convened leading academic researchers, government officials and policy makers, and representatives from large and small firms to explore the potential contributions, technical challenges, and opportunities for government-industry-university collaboration in the area of solid-state lighting. The workshop report devotes special

attention to the potential for substantial social benefits-relating to the environment, energy consumption, and national security-that could arise with the widespread use of solid-state lighting technology. The workshop also focused on the technical and competitive hurdles currently faced in bringing solid-state lighting to market and the potential contributions of a well-conceived national consortium for solid-state lighting research.