

3d Computer Vision

[DOWNLOAD HERE](#)

1;Preface;6 2;Acknowledgements;9 3;Contents;11 4;Part I: Methods of 3D Computer Vision;16
4.1;Chapter 1: Triangulation-Based Approaches to Three-Dimensional Scene Reconstruction;17 4.1.1;1.1
The Pinhole Model;17 4.1.2;1.2 Geometric Aspects of Stereo Image Analysis;20 4.1.2.1;1.2.1 Euclidean
Formulation of Stereo Image Analysis;20 4.1.2.2;1.2.2 Stereo Image Analysis in Terms of Projective
Geometry;22 4.1.2.2.1;1.2.2.1 De nition of Coordinates and Camera Properties;22 4.1.2.2.2;1.2.2.2 The
Essential Matrix;23 4.1.2.2.3;1.2.2.3 The Fundamental Matrix;24 4.1.2.2.4;1.2.2.4 Projective
Reconstruction of the Scene;25 4.1.3;1.3 The Bundle Adjustment Approach;28 4.1.4;1.4 Geometric
Calibration of Single and Multiple Cameras;29 4.1.4.1;1.4.1 Methods for Intrinsic Camera Calibration;29
4.1.4.2;1.4.2 The Direct Linear Transform (DLT) Method;30 4.1.4.3;1.4.3 The Camera Calibration Method
by Tsai (1987);33 4.1.4.4;1.4.4 The Camera Calibration Method by Zhang (1999a);34 4.1.4.5;1.4.5 The
Camera Calibration Toolbox by Bouguet (2007);37 4.1.4.6;1.4.6 Self-calibration of Camera Systems from
Multiple Views of a Static Scene;37 4.1.4.6.1;1.4.6.1 Projective Reconstruction: Determination of the
Fundamental Matrix;37 4.1.4.6.2;1.4.6.2 Metric Self-calibration;40 4.1.4.6.2.1;The Basic Equations for
Self-calibration and Methods for Their Solution;41 4.1.4.6.3;1.4.6.3 Self-calibration Based on Vanishing
Points;43 4.1.4.7;1.4.7 Semi-automatic Calibration of Multiocular Camera Systems;44 4.1.4.7.1;1.4.7.1
The Calibration Rig;45 4.1.4.7.2;1.4.7.2 Existing Algorithms for Extracting the Calibration Rig;46
4.1.4.7.3;1.4.7.3 A Graph-Based Rig Extraction Algorithm;47 4.1.4.7.3.1;Outline of the Rig Finding
Algorithm;47 4.1.4.7.3.2;De nition of the Graph;49 4.1.4.7.3.3;Extraction of Corner Candidates;49
4.1.4.7.3.4;Candidate Filter and Graph Construction;50 4.1.4.7.3.5;Non-bidirectional Edge Elimination;50
4.1.4.7.3.6;Edge Circle Filter;51 4.1.4.7.3.7;Edge Length Filter;51 4.1.4.7.3.8;Corner Enumeration;52
4.1.4.7.3.9;Notch Direction Detector;52 4.1.4.7.3.10;Rig Direction;52 4.1.4.7.4;1.4.7.4 Discussion;52
4.1.4.8;1.4.8 Accurate Localisation of Chequerboard Corners;53 4.1.4.8.1;1.4.8.1 Different Types of
Calibration Targets and Their Localisation in Images;54 4.1.4.8.2;1.4.8.2 A Model-Based Method for
Chequerboard Corner Localisation;57 4.1.4.8.3;1.4.8.3 Experimental Evaluation;60 4.1.4.8.4;1.4.8.4
Discussion;65 4.1.5;1.5 Stereo Image Analysis in Standard Geometry;66 4.1.5.1;1.5.1 Image Recti cation

According to Standard Geometry;66 4.1.5.2;1.5.2 The Determination of Corresponding Points;69
4.1.5.2.1;1.5.2.1 Correlation-Based Blockmatching Stereo Vision Algorithms;70 4.1.5.2.2;1.5.2.2
Feature-Based Stereo Vision Algorithms;71 4.1.5.2.2.1;General Overview;71 4.1.5.2.2.2;A
Contour-Based Stereo Vision Algorithm;73 4.1.5.2.3;1.5.2.3 Dense Stereo Vision Algorithms;79
4.1.5.2.4;1.5.2.4 Model-Based Stereo Vision Algorithms;80 4.1.5.2.5;1.5.2.5 Spacetime Stereo Vision and
Scene Flow Algorithms;81 4.1.5.2.5.1;General Overview;81 4.1.5.2.5.2;Local Intensity Modelling;83
4.1.6;1.6 Resolving Stereo Matching Errors due to Repetitive Structures Using Model Information;88
4.1.6.1;1.6.1 Plane Model;90 4.1.6.1.1;1.6.1.1 Detection and Characterisation of Repetitive Structures;90
4.1.6.1.2;1.6.1.2 Determination of Model Parameters;91 4.1.6.2;1.6.2 Multiple-plane Hand-Arm Model;93
4.1.6.3;1.6.3 Decision Feedback;93 4.1.6.4;1.6.4 Experimental Evaluation;95 4.1.6.5;1.6.5
Discussion;101 4.2;Chapter 2: Three-Dimensional Pose Estimation and Segmentation Methods;102
4.2.1;2.1 Pose Estimation of Rigid Objects;102 4.2.1.1;2.1.1 General Overview;103 4.2.1.1.1;2.1.1.1
Pose Estimation Methods Based on Explicit Feature Matching;103 4.2.1.1.2;2.1.1.2 Appearance-Based
Pose Estimation Methods;104 4.2.1.1.2.1;Methods Based on Monocular Image Data;105
4.2.1.1.2.2;Methods Based on Multiocular Image Data;106 4.2.1.2;2.1.2 Template-Based
EAN/ISBN :
9781447141501 Publisher(s): Springer, Berlin, Springer, London Discussed keywords: 3D-Grafik Format:
ePub/PDF Author(s): Whler, Christian

[DOWNLOAD HERE](#)

Similar manuals:

[3D Computer Vision](#)

[Algorithms For Image Processing And Computer Vision](#)

[An Introduction To 3D Computer Vision Techniques And Algorithms](#)