

Preface

Computer vision is the science and technology of making machines that see. It is concerned with the theory, design and implementation of algorithms that can automatically process visual data to recognize objects, track and recover their shape and spatial layout.

This edited volume contains a selection of articles covering both theoretical and practical aspects of the three main area in Computer Vision: Reconstruction, Registration, and Recognition. The book provides both, an in-depth overview of challenging areas, as well as novel advanced algorithms which exploit Machine Learning and Pattern Recognition techniques to infer the semantic content of images and videos. The topics covered by the chapters include visual feature extraction, feature matching, image registration, 3D reconstruction, object detection and recognition, human actions recognition, image segmentation, object tracking, metric learning, loopy belief propagation, etc. Each chapter contains key references to the existing literature.

The authors of the chapters have been selected among the best students who attended the International Computer Vision Summer School (ICVSS) in the last years, and are co-authored by world renowned researchers in Computer Vision. ICVSS was established in 2007 to provide both an objective and clear overview and an in-depth analysis of the state-of-the-art research in Computer Vision. The courses are delivered by experts in the field, from both academia and industry, and cover both theoretical and practical aspects of real Computer Vision problems. The school is organized every year by University of Cambridge (Computer Vision and Robotics Group) and University of Catania (Image Processing Lab). Different topics are covered each year. A summary of the past Computer Vision Summer Schools can be found at: <http://www.dmi.unict.it/icvss>.

It is our hope that graduate students, young and senior researchers, and academic/industrial professionals will find the book useful for understanding and reviewing current approaches in Computer Vision, thereby continuing the mission of the International Computer Vision Summer School.

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