

Human Recognition in Unconstrained Environments

Using Computer Vision, Pattern Recognition and Machine Learning Methods for Biometrics

Edited by Maria De Marsico, Michele Nappi and Hugo Proença

This book provides a unique picture of the complete "in-the-wild" biometric recognition processing chain from data acquisition through to detection, segmentation, encoding, and matching reactions against security incidents.

Coverage includes:

- Data hardware architecture fundamentals
- Background subtraction of humans in outdoor scenes
- Camera calibration and synchronization
- Biometric information: Real-time detection and data segmentation
- Biometric traits: Feature encoding/matching
- Fusion at different levels
- Reaction against security incidents
- Ethical issues of noncooperative biometric recognition in public spaces

Key features:

- A complete picture of the biometric recognition processing chain, ranging from data acquisition to the reaction procedures against security incidents
- Specific requirements and issues behind each typical phase of the development of a robust biometric recognition system
- Contextualization of the ethical/privacy issues behind the development of a covert recognition system which could be used for forensics as well as security activities
- Thorough discussion on real solutions to hard problems – low resolution, acquisition at a distance, moving targets, low illumination, pose and orientation variations with respect to the acquisition equipment

With this book readers will learn how to:

- Use computer vision, pattern recognition, and machine learning methods for biometric recognition in real-world, real-time settings, especially those related to forensics and security
- Choose the most suited biometric traits and recognition methods for uncontrolled settings
- Evaluate the performance of a biometric system on real-world data

Communications Engineering/Computer vision



ACADEMIC PRESS

An imprint of Elsevier
elsevier.com

ISBN 978-0-08-100705-1



9 780081 007051