

Studies in Computational Intelligence, Volume 336

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Innovations in Defence Support Systems – 3

Intelligent Paradigms in Security

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ISBN 978-3-642-18277-8

e-ISBN 978-3-642-18278-5

DOI 10.1007/978-3-642-18278-5

Studies in Computational Intelligence

ISSN 1860-949X

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Typeset & Cover Design: Scientific Publishing Services Pvt. Ltd., Chennai, India.

Printed on acid-free paper

9 8 7 6 5 4 3 2 1

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*This book collection is dedicated to all
researchers in the field of intelligent
environments.*

Preface

Intelligent Paradigms in Security is a collection of articles introducing the latest advances in the field of intelligent monitoring. The book is intended for readers from a computer science or an engineering background. It describes techniques for the interpretation of sensor data in the context of automatic understanding of complex scenes captured in large public areas. The aim is to guide the reader through a number of research topics for which the existing video surveillance literature describes partial and incomplete solutions, and introduces the next challenges in intelligent video surveillance. Each chapter in the book presents a solution to one aspect of the problem of monitoring a public space. The types of environment of interest are often characterized by clutter and complex interactions between people and between people and objects. Each chapter proposes a sophisticated solution to a specific problem. Public environments, such as an airport concourse, a shopping mall, a train station and similar public spaces, are large and require numerous sensors to monitor the environment. The deployment of a large number of sensors produces a large quantity of video data (*petabytes* or larger) that must be processed; in addition different scenes may require processing at a different level of granularity. Service robots might soon inhabit public areas, collecting global information but also approaching regions / areas of interest in scene to collect more detailed information, such as an abandoned luggage. The processing of visual data or data from any sensor modality must occur at a speed consistent with the objective / goal. This might be real-time, although some data and information can be processed off-line, for instance to generate new knowledge about the scene for the purpose of enhancing the system. The performance of systems must be evaluated according to criteria that include time latency, accuracy in the detection of an event or the global dynamics, response to queries about the event monitored or the expected dynamics in the environment. To achieve this, the concept of normality is used. A model of what constitutes normality permits deviations and/or large anomalies in the behavior of people or position of objects in the monitored environment to be detected. We are confident that our collection will be of great use to practitioners of the covered fields of research, but could also be formative for doctoral students and researchers in

intelligent environments. We wish to express our gratitude to the authors and reviewers for their time and vision as well as to the Springer for the assistance during the publication phase of the book.

London, Belfast, Adelaide
September 2010

Paolo Remagnino
Dorothy N. Monekosso
Lakhmi Jain

Acknowledgements

The editors wish to thank all the contributors of the collection for their endeavors and patience.

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