

Husrev Taha Sencar, Sergio Velastin, Nikolaos Nikolaidis, Shiguo Lian (Eds.)

Intelligent Multimedia Analysis for Security Applications

Studies in Computational Intelligence, Volume 282

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*Intelligent Multimedia Analysis for Security
Applications*, 2010
ISBN 978-3-642-11754-1

Husrev Taha Sencar, Sergio Velastin,
Nikolaos Nikolaidis, and Shiguo Lian (Eds.)

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ISBN 978-3-642-11754-1

e-ISBN 978-3-642-11756-5

DOI 10.1007/978-3-642-11756-5

Studies in Computational Intelligence

ISSN 1860-949X

Library of Congress Control Number: 2010924914

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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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Preface

The advances in the generation and processing of multimedia data (e.g. documents, images, video, audio, animations, etc.) have had an immense impact on multimedia applications and, as a result, multimedia has permeated almost every aspect of our daily lives. This development has also brought with it a whole host of issues and challenges which were either not as apparent before or were non-existent. Today, digital media is relied upon as primary news and information resource, as evidence in a court of law, as part of medical records or as financial documents. However, there is still lack of authoritative mechanisms to verify the origin and veracity of media data. Indeed, multimedia content has become an extremely valuable asset, and it is being both disseminated and consumed on a larger scale than ever before, but the issues concerning how the content owners and publishers should control the distribution of and access to their content have not been satisfactorily resolved yet.

There are various other issues related to use of multimedia that require further analysis and research. For example, it is a known fact that some criminal organizations communicate with its members by posting information embedded media to public forums and web-sites to evade surveillance by law enforcement. Conventional multimedia processing approaches do not provide sufficiently effective means for defending against such communication. At the same time, audio and video surveillance is becoming increasingly more ubiquitous, with systems deployed to detect and report abnormal events and to prevent criminal activity. Essentially, this leads to accumulation of insurmountable amount of media data for which appropriate analysis, indexing and search tools need to be designed. Similarly, speech and face recognition capabilities are now being required in many critical applications to automatically identify individuals. However, achieving these tasks with high accuracy still remains difficult due to the variety of operating conditions encountered. All these existing and emerging security-related problem domains require radically new approaches to dealing with multimedia data and attract the interest of many researchers in diverse application areas.

To the best of our knowledge, this is one of the very few books focused on analysis of multimedia data and newly emerging multimedia applications with an emphasis on security. The main objective of this project was to assemble as much research coverage as possible related to the field by defining the latest innovative technologies and providing the most comprehensive list of research references. The book includes sixteen chapters highlighting current concepts, issues and emerging technologies.

Distinguished scholars from many prominent research institutions around the world contributed to the book, shedding light on various aspects, including not only some fundamental knowledge and the latest key techniques, but also typical applications and open issues. Topics covered include dangerous or abnormal event detection, interaction recognition, person identification based on multiple traits, audiovisual biometric person authentication and liveness verification, emerging biometric technologies, sensitive information filtering for teleradiology, detection of nakedness in images, audio forensics, steganalysis, media content tracking authentication and illegal distributor identification through watermarking and content-based copy detection.

We believe that the comprehensive coverage of diverse disciplines in the field of intelligent multimedia analysis for security applications will contribute to a better understanding of all topics, research, and discoveries in this emerging and evolving field and that the included contributions will be instrumental in the expansion of the corresponding body of knowledge, making this book a reference source of information. It is our sincere hope that this publication and its great amount of information and research will assist our research colleagues, faculty members and students, and organization decision makers in enhancing their understanding for the concepts, issues, problems, trends, challenges and opportunities related to this research field. Perhaps this book will even inspire its readers to contribute to the current discoveries in this immense field.

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Acknowledgments

The editors would like to acknowledge the help of all people that were involved in the collation process of the book, without whose support the project could not have been satisfactorily completed. Deep appreciation and gratitude is due to the authors of all the chapters for their efforts to achieve a high quality project.

Special thanks go to the publishing team at Springer, whose contributions throughout the whole process from inception of the initial idea to final publication have been invaluable. In particular to Dr. Thomas Ditzinger, who continuously prodded via e-mail to help us keep the project on schedule and to Prof. Janusz Kacprzyk, whose enthusiasm motivated us to initiate the project.

And last but not least, a big and sincere expression of gratitude to our families, for their unfailing support and encouragement during the months it took to give birth to this book.

November 2009

Dr. Husrev Taha Sencar
Dr. Sergio Velastin
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