BIOMETRICS, COMPUTER SECURITY SYSTEMS AND ARTIFICIAL INTELLIGENCE APPLICATIONS

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FOREWORD

The book to which I was asked by the editors to write a foreword is an interesting collection of contributions. It presents the extended versions of the authors' works already introduced at the International Multi-Conference on Advanced Computer Information and Security Systems ACS-CISIM 2005. These contributions had already been reviewed once before the conference for presentation at the conference while some of them passed another selection to be prepared in their current versions for this book.

I am convinced the book will be of help to the researchers in the field of Computer Methods in Biometrics, Security Systems and Artificial Intelligence. They would find the contributions of other researchers of real benefit to them.

I would encourage those who have the book in hands to read it.

Professor Andrzej Salwicki

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The editors are thankful to all contributors whose works have proved to be of great interest to all participants of the International Conference ACS-CISIM, which was held in Elk, Poland in summer 2005.

We also are greatly indebted to the Invited Speakers for their really worth listening and reading keynote talks.

The book could not have appeared without the deep devotion and hard effort of the reviewers, to whom the editors and the contributors really feel grateful. Their reviews for both the Conference Proceedings and this Postconference Book were of great benefit especially to the young researchers whose work still needed others' professional expertise and comments despite the fact that their scientific research output was positively evaluated. Most of the reviewers did proofreading instead of refereeing. We really are proud of having the book contributions reviewed by them.

Therefore, our indebtedness is due to all the following Professors:

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INTRODUCTION

This book presents the most recent achievements in the field of a very fast developing Computer Science. It is a very fascinating science, which still encompasses a number of uncovered areas of study with urgent problems to be solved. Therefore, thousands of scientists are dealing with it elaborating on more and more practical and efficient methods. It is likely that their work will soon result in construction of a very effective, artificial computer-brain.

All scientific works presented in this book have been partitioned in three topical groups:

1. Image Analysis and Biometrics,
2. Computer Security Systems,
3. Artificial Intelligence and Applications.

All papers in the book are noteworthy, but especially we would like to draw the reader's attention to some particular papers beginning from part 1.

Image analysis and biometrics is the branch of Computer Science, which deals with a very difficult task of artificial, visual perception of objects and surroundings and problems connected with it. To the most remarkable papers in this part certainly
belongs the invited paper of Anna Bartkowiak et al. where the authors present an interesting mathematical model showing their experience in visualization multivariate data. In his invited paper, Ryszard Choraś introduces a survey on Content-Based Image Retrieval showing his and others' last achievements in this field. Three innovative papers on Face Recognition are also given in the same part. The remaining papers outline their authors' contribution to Speech Analysis, Signature Recognition using Dynamic Time Warping algorithm and hybrid fused approaches for Speech and Speaker Identification.

Computer Security and Safety is at present a very important and intensively investigated branch of Computer Science because of the menacing activity of hackers, of computer viruses etc. To the most

interesting papers in this chapter belongs the invited paper of Janusz Stokłosa et al. It contains an excellent overview of experiments in designing S-boxes based o nonlinear Boolean functions. The authors present also their new algorithm for random generation of perfect nonlinear function. Krzysztof Chmiel's paper concerns also S-boxes, but in contrast to the previous paper, the author discusses the problem of the differential and the linear approximations of two classes of S-box functions. Two other papers relate to PKI services, which can be used for sending sensitive information and for the public key certificate status validation.

The third part of the book **Artificial Intelligence** contains 15 absorbing papers, five of which are keynotes and invited papers. The keynotes and invited papers presented at or sent to the ACS-CISIM 2005 conference introduce the latest achievements of their authors W. Dańko, G. Facchinetti et al., A. Imada, K. Madani, G. Mirkowska with
A. Salwicki (their keynote paper is not included in this book on their request),
R. Tadeusiewicz et al. and S. Wierzchoń et al. The new approaches or notes they show in Computer Artificial Intelligence and its applications are really worth making use of. The remaining papers in this part demonstrate the latest scientific results in the works of their authors in different aspects and areas of Computer Science and its wide applications.

The works contained in the presented book will surely enable you, Dear Reader, to keep pace with significant developments in Computer Science.

We wish you a great satisfaction from reading it.

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TABLE OF CONTENTS

PART I - IMAGE ANALYSIS AND BIOMETRICS

PART II - COMPUTER SECURITY SYSTEMS

PART III - ARTIFICIAL INTELLIGENCE AND APPLICATIONS