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SELECTED TOPICS ON IMAGE PROCESSING AND CRYPTOLOGY

Matematički institut SANU

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PREFACE

This volume is dedicated to a number of issues on applications of the mathematics to the area of information-communications technologies (ICT) and addresses one of the hot topics within ICT – information processing, and particularly image processing and cryptology. Also note that image processing is a background of biometric authentication for information security where cryptology provides the basic components for developing security mechanisms. The purpose of this volume is to draw attention to certain methods relevant as a background or as particular elements for design of information security mechanisms.

The chapters of this volume illustrate employments of different mathematical topics for certain real-life issues. as well as point out to novel mathematical challenges originating from information processing problems.

This volume entitled "Selected Topics on Image Processing and Cryptology" consists of the following three chapters: (i) "Shape Descriptors for Image Analysis" by Joviša Žunić, (ii) "The coverage model and its use in image processing" by Nataša Sladoje and Joakim Lindblad, and (iii) "On Certain Approaches for Analysis and Design of Cryptographic Techniques for Symmetric Encryption and Key Management" by Miodrag Mihaljević.

The presentations given in this volume also originate from over 100 top-level references of the authors (which have been cited over 1000 times up to now) accumulated through a number of research projects within Mathematical Institute, Serbian Academy of Sciences and Arts (SANU) where the authors of the chapters were very active participants. Also, it is important to point out that these results are also closely related to extensive international collaboration with a number of leading universities and institutes in U.K., Sweden and Japan.

We believe that this book yields a useful overview of a number of techniques and could serve as a reference background for further research activities, as well as an introduction to the addressed topics and an encouragement of beginners interested in image processing or cryptology.

Miodrag Mihaljević

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