Biometrics: Theory, Methods, and Applications
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DESCRIPTION

Edited by a panel of experts, this book fills a gap in the existing literature by comprehensively covering system, processing, and application aspects of biometrics, based on a wide variety of biometric traits. The book provides an extensive survey of biometrics theory, methods, and applications, making it an indispensable source of information for researchers, security experts, policy makers, engineers, practitioners, and graduate students. The book's wide and in-depth coverage of biometrics enables readers to build a strong, fundamental understanding of theory and methods, and provides a foundation for solutions to many of today's most interesting and challenging biometric problems.

Biometric traits covered:
Face, Fingerprint, Iris, Gait, Hand Geometry, Signature, Electrocardiogram (ECG), Electroencephalogram (EEG), physiological biometrics.

Theory, Methods and Applications covered:
Multilinear Discriminant Analysis, Neural Networks for biometrics, classifier design, biometric fusion, Event-Related Potentials, person-specific characteristic feature selection, image and video-based face, recognition/verification, near-infrared face recognition, elastic graph matching, super-resolution of facial images, multimodal solutions, 3D approaches to biometrics, facial aging models for
recognition, information theory approaches to biometrics, biologically-inspired methods, biometric encryption, decision-making support in biometric systems, privacy in biometrics.

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**ABOUT THE AUTHOR**

**Nikolaos V. Boulgouris**, PhD, is a Senior Lecturer in the Department of Electronic Engineering at King's College London. Dr. Boulgouris has participated in several research projects in the areas of biometrics, pattern recognition, security, and multimedia communications. He has published more than fifty scientific articles in refereed journals and conference proceedings. He is a Senior Member of the IEEE and has served as an associate editor (2007–2010) for the *IEEE Signal Processing Letters*.

**Konstantinos N. Plataniotis**, PhD, is a Professor in the University of Toronto's Edward S. Rogers Sr. Department of Electrical & Computer Engineering. His research interests are in biometrics, communications systems, image and signal processing, multimedia systems, and pattern recognition. He is a registered professional engineer in Ontario and the Editor in Chief (2009–2011) for the *IEEE Signal Processing Letters*. He has contributed to fifteen books and has published more than 300 papers in refereed journals and conference proceedings.

**Evangelia Micheli-Tzanakou**, PhD, is Professor II and Director of the Computational Intelligence Laboratories in the Department of Biomedical Engineering at Rutgers University. She established the first-ever experimental Brain to Computer Interface. She is the recipient of many awards and has published over 300 scientific papers. An IEEE Fellow, she has served in many positions including the IEEE Board of Directors, president of the Computational Intelligence Society, Chair of the IEEE Awards Board, and recently as the IEEE VP of Educational Activities.

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**FEATURES**

- Builds a strong, fundamental understanding of theory and methods and provides a foundation for solutions to many of today's most interesting and challenging biometrics problems

- Emphasis is given to emerging topics, such as userspecific parameterization, biometric individuality, biometric cryptosystems, quality measure of biometrics data, and sensor interoperability
Each chapter includes a summary and bibliography for further reading.

Includes access to a Web site which will provide a wealth of information extending the book’s content, including links to biometrics related forums.

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