

Preface

Biometric authentication is increasingly gaining popularity in a large spectrum of applications, ranging from government programs (e.g., national ID cards, visas for international travel, and the fight against terrorism) to personal applications such as logical and physical access control. Although a number of effective solutions are currently available, new approaches and techniques are necessary to overcome some of the limitations of current systems and to open up new frontiers in biometric research and development. The 30 papers presented at Biometric Authentication Workshop 2004 (BioAW 2004) provided a snapshot of current research in biometrics, and identify some new trends. This volume is composed of five sections: face recognition, fingerprint recognition, template protection and security, other biometrics, and fusion and multimodal biometrics. For classical biometrics like fingerprint and face recognition, most of the papers in Sect. 1 and 2 address robustness issues in order to make the biometric systems work in suboptimal conditions: examples include face detection and recognition under uncontrolled lighting and pose variations, and fingerprint matching in the case of severe skin distortion. Benchmarking and interoperability of sensors and liveness detection are also topics of primary interest for fingerprint-based systems. Biometrics alone is not the solution for complex security problems. Some of the papers in Sect. 3 focus on designing secure systems; this requires dealing with safe template storage, checking data integrity, and implementing solutions in a privacy-preserving fashion. The match-on-tokens approach, provided that current accuracy and cost limitations can be satisfactorily solved by using new algorithms and hardware, is certainly a promising alternative. The use of new biometric indicators like eye movement, 3D finger shape, and soft traits (e.g., height, weight and age) is investigated by some of the contributions in Sect. 4 with the aim of providing alternative choices for specific environments and applications. Improvements and new ideas are also presented for other popular biometrics like iris, palmprints and signature recognition. Multimodal biometrics has been identified as a promising area; the papers in Sect. 5 explore some insights into this topic, and they provide novel approaches for combinations at sensor, feature extraction and matching score levels.

May 2004

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Biometric Authentication

ECCV 2004 International Workshop, BioAW 2004,
Prague, Czech Republic, May 15, 2004, Proceedings

Maltoni, D.; Jain, A.K. (Eds.)

2004, XIV, 350 p., Softcover

ISBN: 978-3-540-22499-0