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Call for papers

A Special Issue of *Image and Vision Computing*

"Multibiometrics and Mobile-biometrics: Recent Advances and Future Research"

Biometrics refers to the science of recognizing individuals based on their physical, physiological or behavioral traits such as face, fingerprints, iris, gait and voice. The past decade has witnessed the incorporation of biometric solutions in various access control and identity management applications, such as laptops and border control systems. However, biometric systems that are based on a single trait often suffer from limitations such as lack of invariant representation, non-universality, noisy sensor data, lack of individuality of the biometric trait and susceptibility to circumvention. These problems can be addressed, at least to some extent, by using multibiometric fusion techniques that consolidate evidences obtained from multiple biometric sources. Recent research in multibiometrics has spanned several topics including fusion methodology, quality-based fusion, adaptive fusion mechanisms, integration of soft biometric traits with primary traits, methods for combining biometrics and forensic evidence, fusion of liveness detection measures with match score, multimodal database indexing, mixing biometrics, multibiometric cryptosystems, etc. However, there are still several challenging problems in improving the accuracy, robustness, efficiency, security, privacy and ergonomics of multibiometric systems. Furthermore, new problem domains are emerging with the advent of new applications, e.g., personal authentication on portable mobile devices in large-scale cloud-like environments.

Indeed, the portable device and mobile phone market has witnessed rapid growth in recent years with the emergence of several revolutionary products. Modern mobile devices require a high level of security due to their use in sensitive personal transactions such as online banking, email communication and medical record access. But mobile-biometrics *per se* involves uncontrolled environments with relatively limited computational resources, and the associated challenges are yet to be satisfactorily resolved. This research field is still in its infancy and substantial efforts are needed towards developing efficient feature extraction and matching algorithms that can be embedded into mobile devices.

This special issue will focus on the recent advances as well as future research relevant to all aspects of multibiometric and mobile-biometric technologies, and the challenges in designing, developing, and deploying these technologies in various applications. This special issue is expected to be an effective channel for researchers to report on the latest results and findings in multibiometrics and mobile-biometrics, while proposing new ideas and directions for future development.

About the issue

The topics of this special issue include, but are not limited to:

- New data sensing technologies for multibiometrics and mobile-biometrics;
- Establishing public databases for multibiometrics and mobile-biometrics;
- Data pre-processing, template update, feature extraction, recognition, and matching techniques for multibiometric and mobile-biometric systems;
- Database indexing techniques for multibiometrics and mobile-biometrics;
- Protocols, standards and interfaces for multibiometric and mobile-biometric systems;
- Multibiometric cryptosystems;
- Cloud-based solutions for multibiometrics and mobile-biometrics;
- Security and privacy of multibiometric databases and mobile-biometric data;
- New fusion architectures for use in multibiometrics and mobile-biometric systems;
- Signal processing and machine learning techniques for multibiometrics and mobile-biometrics;
- Multi-sensor and multi-spectral fusion;
- Performance and reliance assessment of multibiometric and mobile-biometric system;
- Novel applications of multibiometrics and mobile-biometrics.
- Human factors and ergonomics for mobile-biometric devices.

Submission format

Papers will be evaluated based on their originality, presentation, relevance and contribution to the field of multibiometrics and mobile-biometrics, as well as their suitability to the special issue and their overall quality. Submitted papers must be written in excellent English and describe original research which has not been published nor currently under review in other journals or conferences. Previously published conference papers should be clearly identified by the authors (at the submission stage) and an explanation should be provided as to how such papers have been extended to be considered for this special issue. Guest editors will make an initial determination of the suitability and scope of all submissions. Papers that lack originality, clarity in presentation or fall outside the scope of the special issue will not be sent for review and the authors will be promptly notified in such cases.

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Submission Guideline

All manuscripts and any supplementary material should be submitted through Elsevier Editorial System (EES). The authors must select "Special Issue: Advances in Multibiometrics" when specifying the "Article Type" in the submission process. The EES website is located at: http://ees.elsevier.com/imavis/.

Guide for Authors

The guide for Authors can be found on the journal homepage (http://ees.elsevier.com/imavis/).