Front Matter for 7351


Mobile Multimedia/Image Processing, Security, and Applications 2009

Sos S. Agaian
Sabah A. Jassim
Editors

14–15 April 2009
Orlando, Florida, United States

Sponsored and Published by
SPIE
Contents

vii Conference Committee
ix Introduction

SESSION 1 IMAGE ENHANCEMENT/RESTORATION TECHNIQUES

7351 03 The design of wavelets for image enhancement and target detection (Invited Paper) [7351-02]
S. DelMarco, BAE Systems (United States); S. Agaian, The Univ. of Texas at San Antonio (United States)

7351 04 Multi-view video segmentation and tracking for video surveillance [7351-03]
G. Mohammadi, F. Dufaux, T. H. Minh, T. Ebrahimi, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

7351 05 A modified image restoration algorithm for multiframe degraded images [7351-04]
Z. Geng, Z. Zhao, X. Song, Zhengzhou Institute of Surveying and Mapping (China)

7351 06 Compensating image degradation due to atmospheric turbulence in anisoplanatic conditions [7351-05]
C. S. Huebner, Forschungsgesellschaft für Angewandte Naturwissenschaften e.V., FOM (Germany)

7351 07 Deghosting based on in-loop selective filtering using motion vector information for low-bit-rate-video coding [7351-06]
N. D. Narvekar, W.-J. Chien, N. G. Sadaka, Arizona State Univ. (United States); G. P. Abousleman, General Dynamics C4 Systems, Inc. (United States); L. J. Karam, Arizona State Univ. (United States)

SESSION 2 NETWORKING

7351 09 Integrity monitoring in WLAN positioning systems [7351-08]
S. P. Yerubandi, B. Kaligikar, M. Gunturu, D. Akopian, P. Chen, The Univ. of Texas at San Antonio (United States)

SESSION 3 BIOMETRICS: TEMPLATES AND THEIR PROTECTION I

7351 0A A new approach for non-cooperative iris recognition [7351-10]
C. Beicher, Y. Du, Indiana Univ.-Purdue Univ. Indianapolis (United States)

7351 0B An FPGA-based design of a modular approach for integral images in a real-time face detection system [7351-11]
H. T. Ngo, R. N. Rakvic, R. P. Broussard, R. W. Ives, U.S. Naval Academy (United States)
### SESSION 4  SECURITY OF DIGITAL MEDIA AND STEGANOGRAPHY

- **7351 0D**  
  Low-cost mobile video-based iris recognition for small databases  
  N. L. Thomas, Y. Du, S. Muttineni, S. Mang, D. Sran, Indiana Univ.-Purdue Univ. Indianapolis (United States)

- **7351 0E**  
  An orthogonal subspace projection approach for face recognition  
  Z. Zhou, Y. Du, Indiana Univ.-Purdue Univ. Indianapolis (United States); C.-I Chang, Univ. of Maryland (United States)

### SESSION 5  IMAGE QUALITY/EVALUATION MEASURES

- **7351 0F**  
  Selective object encryption for privacy protection  
  Y. Zhou, K. Panetta, Tufts Univ. (United States); R. Cherukuri, S. Agaian, Univ. of Texas at San Antonio (United States)

- **7351 0G**  
  Characterizing cryptographic primitives for lightweight digital image encryption  
  F. Ahmed, C. L. Resch, The Johns Hopkins Univ. Applied Physics Lab. (United States)

- **7351 0H**  
  Fast unitary heap transforms: theory and application in cryptography  
  A. M. Grigoryan, K. Naghdali, The Univ. of Texas at San Antonio (United States)

- **7351 0I**  
  Improved accuracy with higher protection of a biometric system using image and decision fusion techniques  
  S. Alsharif, A. El-Saba, S. Bokhari, Univ. of South Alabama (United States)

### SESSION 6  BIOMETRICS: TEMPLATES AND THEIR PROTECTION II

- **7351 0O**  
  A new approach for direct image registration  
  G. Brodetzki, A. Notik, D. Azaria, Y. Krips, Elisra Electronic Systems Ltd. (Israel)

- **7351 0P**  
  A lightweight approach for biometric template protection  
  H. Al-Assam, H. Sellahewa, S. Jassim, Univ. of Buckingham (United Kingdom)

- **7351 0Q**  
  Using artificial neural networks to statistically fuse current iris segmentation techniques to improve limbic boundary localization  
  R. P. Broussard, R. W. Ives, U.S. Naval Academy (United States)
SESSION 7 POSTER SESSION

7351 0S Rate-Adaptive Video Compression (RAVC) Universal Video Stick (UVS) [7351-27]
D. Hench, Air Force Research Lab. (United States)

7351 0T WiMAX-WiFi convergence with OFDM bridge [7351-28]
A. Al-Sherbaz, C. Adams, S. Jassim, Univ. of Buckingham (United Kingdom)

7351 0U On a nascent mathematical-physical latency-information theory, part I: the revelation of powerful and fast knowledge-unaided power-centroid radar [7351-29]
E. H. Feria, College of Staten Island, CUNY (United States)

7351 0V On a nascent mathematical-physical latency-information theory, part II: the revelation of guidance theory for intelligence and life system designs [7351-30]
E. H. Feria, College of Staten Island, CUNY (United States)

7351 0W Hardware-based segmentation in iris recognition and authentication systems [7351-31]
B. J. Ulis, R. P. Broussard, R. N. Rakvic, R. W. Ives, U.S. Naval Academy (United States); N. Steiner, Univ. of Southern California (United States); H. Ngo, U.S. Naval Academy (United States)

7351 0Y Image steganography in fractal compression [7351-33]
M.-C. Chen, S. S. Agaian, C. L. P. Chen, The Univ. of Texas at San Antonio (United States); B. M. Rodriguez, The Johns Hopkins Univ. Applied Physics Lab. (United States)

Author Index
Conference Committee

Symposium Chair
Ray O. Johnson, Lockheed Martin Corporation (United States)

Symposium Cochair
Michael T. Eismann, Air Force Research Laboratory (United States)

Conference Chairs
Sos S. Agaian, The University of Texas at San Antonio (United States)
Sabah A. Jassim, University of Buckingham (United Kingdom)

Program Committee
David Akopian, The University of Texas at San Antonio (United States)
Salim Alsharif, University of South Alabama (United States)
Cesar Bandera, BanDeMar Networks (United States)
Chang Wen Chen, Florida Institute of Technology (United States)
Reiner Creutzburg, Fachhochschule Brandenburg (Germany)
Martin Dietze, Consultant (Germany)
Yingzi Du, Indiana University-Purdue University Indianapolis (United States)
Frederic Dufaux, École Polytechnique Fédérale de Lausanne (Switzerland)
Touradj Ebrahimi, École Polytechnique Fédérale de Lausanne (Switzerland)
Erlan H. Feria, College of Staten Island/CUNY (United States)
Phalguni Gupta, Indian Institute of Technology Kanpur (India)
Yo-Ping Huang, National Taipei University of Technology (Taiwan)
Jacques Koreman, Norges Teknisk-Naturvitenskapelige Universitet (Norway)
Maryline Maknavicius, Institut National des Télécommunications (France)
Alessandro Neri, University degli Studi di Roma Tre (Italy)
Gilbert L. Peterson, Air Force Institute of Technology (United States)
Sailil Prabhakar, DigitalPersona, Inc. (United States)
Sonia Salicetti, GET/INT (France)
Harin Sellahewa, University of Buckingham (United Kingdom)
Xiyu Shi, University of Surrey (United Kingdom)
Yuri Shukuryan, National Academy of Sciences of Armenia (Armenia)
Gregory B. White, The University of Texas at San Antonio (United States)
Session Chairs

1. Image Enhancement/Restoration Techniques
   Sabah A. Jassim, University of Buckingham (United Kingdom)

2. Networking
   Sabah A. Jassim, University of Buckingham (United Kingdom)

3. Biometrics: Templates and Their Protection I
   Harin Sellahewa, Gray Cancer Institute (United Kingdom)

4. Security of Digital Media and Steganography
   Salim Alsharif, University of South Alabama (United States)

5. Image Quality/Evaluation Measures
   Sos S. Agaian, The University of Texas at San Antonio (United States)

6. Biometrics: Templates and Their Protection II
   Sabah A. Jassim, University of Buckingham (United Kingdom)
Introduction

While rapid technological advances provide new and exciting opportunities for wide ranging applications, they also present the research community with numerous challenges that are exacerbated by growing security concerns. Among the serious security challenges generated are those associated with modern multimedia systems transmitted and exchanged over wireless networks and pervasive computing environments. The main motivation for defence and security research activities is associated with the rapid growth in mass deployment of programmable mobile devices equipped with low-cost, high-resolution digital cameras, sensors, the rise of cybercrime, and identity theft. The most significant challenges in this respect include: efficient and secure processing of image/video, processing suitable for implementation on mobile devices that are constrained in their memory capacities, computational powers, and developing innovative solutions that facilitate the convergence of different wireless technologies (e.g. WiFi and WiMAX).

This year's conference was characterised by high quality research manuscripts presented as full papers or posters which together made significant contributions to meeting some of the challenges listed above. The dominating theme was the development of simple and efficient proactive security solutions for protecting computing infrastructures and sensitive information systems while preserving the privacy of the citizens. Several papers propose novel, secure, and efficient image/video encryption and steganography schemes for mobile devices/environments. Feature detection and extraction in images are dealt with in a number of papers that also propose approaches to improving the accuracy of such schemes. Various aspects of identification schemes are tackled with emphasis on the effect of image quality measures and adaptive human recognition schemes, faces, and irises, as well as mechanisms to protect biometric data. The conference also included number of invited presentations that fit the main issues and concerns raised in the symposium.

The various presentations encouraged quality questions and interactions among the researchers attending the conference.

Sabah Jassim
Sos Agaian