

**2012 IEEE Fifth International  
Conference on Biometrics:  
Theory, Applications and Systems  
(BTAS 2012)**

**Arlington, Virginia, USA  
23-27 September 2012**



**IEEE Catalog Number: CFP12BTA-PRT  
ISBN: 978-1-4673-1384-1**

# TABLE OF CONTENTS

<b>Hybrid Template Update System for Unimodal Biometric Systems</b> .....	1
<i>Romain Giot, Christophe Rosenberger, Bernadette Dorizzi</i>	
<b>Gait-ID on the Move: Pace Independent Human Identification Using Cell Phone Accelerometer Dynamics</b> .....	8
<i>Felix Juefei-Xu, Chandrasekhar Bhagavatula, Aaron Jaech, Unni Prasad, Marios Savvides</i>	
<b>Fingerprint Self-Captures - Usability of a Fingerprint System with Real-time Feedback</b> .....	16
<i>Yee-Yin Choong, Mary F. Theofanos, Haiying Guan</i>	
<b>Fingerprint Image Synthesis based on Statistical Feature Models</b> .....	23
<i>Qijun Zhao, Anil K. Jain, Nicholas G. Paulter, Melissa Taylor</i>	
<b>Detecting and Classifying Scars, Marks, and Tattoos Found in the Wild</b> .....	31
<i>Brian Heflin, Walter Scheirer, T. E. Boulton</i>	
<b>Biometric Verification via Complex Eye Movements: The Effects of Environment and Stimulus</b> .....	39
<i>Corey D. Holland, Oleg V. Komogortsev</i>	
<b>Robust Varying-Resolution Iris Recognition</b> .....	47
<i>Xinyu Huang, Bo Fu, Changpeng Ti, Alade Tokuta, Ruigang Yang</i>	
<b>Can We Use Minor Finger Knuckle Images to Identify Humans?</b> .....	55
<i>Ajay Kumar</i>	
<b>Comparing Classification Algorithm for Mouse Dynamics based User Identification</b> .....	61
<i>Chao Shen, Zhongmin Cai, Roy A. Maxion, Guang Xiang, Xiaohong Guan</i>	
<b>Towards Optimal Countermeasures against Wolves and Lambs in Biometrics</b> .....	69
<i>Takao Murakami, Kenta Takahashi, Kanta Matsuura</i>	
<b>Matching Vein Patterns from Color Images for Forensic Investigation</b> .....	77
<i>Hengyi Zhang, Chaoying Tang, Adams Wai-Kin Kong, Noah Craft</i>	
<b>Arbitrary View Transformation Model for Gait Person Authentication</b> .....	85
<i>Daigo Muramatsu, Akira Shiraishi, Yasushi Makihara, Yasushi Yagi</i>	
<b>A Facial Aging Approach to Identification of Identical Twins</b> .....	91
<i>T. Hoang Ngan Le, Khoa Luu, Keshav Seshadri, Marios Savvides</i>	
<b>Efficient Iris Segmentation using Grow-Cut Algorithm for Remotely Acquired Iris Images</b> .....	99
<i>Chun-Wei Tan, Ajay Kumar</i>	
<b>Can Faces Verify Blood-relations?</b> .....	105
<i>Gowri Somanath, Chandra Kambhamettu</i>	
<b>Gait-based Person-Verification System for Forensics</b> .....	113
<i>Haruyuki Iwama, Daigo Muramatsu, Yasushi Makihara, Yasushi Yagi</i>	
<b>Block Based Face Recognition Approach Robust to Nose Alterations</b> .....	121
<i>Neslihan Kose, Nesli Erdogmus, Jean-Luc Dugelay</i>	
<b>A Multi-Sample Standoff Multimodal Biometric System</b> .....	127
<i>Chris Boehnen, Del Barstow, Dilip Patlolla, Chris Mann</i>	
<b>Extremely Dense Face Registration: Comparing Automatic Landmarking Algorithms for General and Ethno-Gender Models</b> .....	135
<i>Amrutha Sethuram, Jason Saragih, Karl Ricanek, Benjamin Barbour</i>	
<b>A Robust Approach to Facial Ethnicity Classification on Large Scale Face Databases</b> .....	143
<i>Yiting Xie, Khoa Luu, Marios Savvides</i>	
<b>Securing Handheld Devices and Fingerprint Readers with ECG Biometrics</b> .....	150
<i>Chenxing Zhao, Tom Wysocki, Foteini Agrafioti, Dimitrios Hatzinakos</i>	
<b>Investigating Multi-touch Gestures as a Novel Biometric Modality</b> .....	156
<i>Napa Sae-Bae, Nasir Memon, Katherine Isbister</i>	
<b>Predicting Gender and Weight from Human Metrology using a Copula Model</b> .....	162
<i>Deng Cao, Cunjian Chen, Donald Adjeroh, Arun Ross</i>	
<b>Fingerprint Retrieval Approach Based on Novel Minutiae Triplet Features</b> .....	170
<i>Baoxi Yuan, Fei Su, Anni Cai</i>	
<b>ORNL Biometric Eye Model for Iris Recognition</b> .....	176
<i>Hector J. Santos-Villalobos, Del R. Barstow, Mahmut Karakaya, Chris B. Boehnen, Edward Chaum</i>	
<b>Supervised Sparse Representation with Coefficients' Group Constraint</b> .....	183
<i>Xin Guo, Zhicheng Zhao, Anni Cai</i>	
<b>Slap Fingerprint Segmentation</b> .....	189
<i>Puneet Gupta, Phalguni Gupta</i>	

<b>First Eye Movement Verification and Identification Competition at BTAS 2012</b> .....	195
<i>Paweł Kasprowski, Oleg V. Komogortsev, Alex Karpov</i>	
<b>Encoding, Matching and Score Normalization for Cross Spectral Face Recognition: Matching SWIR versus Visible Data</b> .....	203
<i>Jinyu Zuo, Francesco Nicolo, Natalia A. Schmid, Sirisha Boothapati</i>	
<b>Multimodal Ocular Biometrics Approach: A Feasibility Study</b> .....	209
<i>Oleg V. Komogortsev, Alexey Karpov, Corey D. Holland, Hugo P. Proenca</i>	
<b>Human Eye Movements as a Trait for Biometrical Identification</b> .....	217
<i>Ioannis Rigas, George Economou, Spiros Fotopoulos</i>	
<b>3D Face Texture Modeling from Uncalibrated Frontal and Profile Images</b> .....	223
<i>Hu Han, Anil K. Jain</i>	
<b>A div-curl Regularization Model for Fingerprint Orientation Extraction</b> .....	231
<i>Kai Cao, Jimin Liang, Jie Tian</i>	
<b>Face Recognition: Impostor-based Measures of Uniqueness and Quality</b> .....	237
<i>Brendan F. Klare, Anil K. Jain</i>	
<b>Self-Similarity Representation of Weber Faces for Kinship Classification</b> .....	245
<i>Naman Kohli, Richa Singh, Mayank Vatsa</i>	
<b>New Impostor Score Based Rejection Methods for Continuous Keystroke Verification with Weak Templates</b> .....	251
<i>Md S. Hossain, Kiran S. Balagani, Vir V. Phoha</i>	
<b>Robust Feature Extraction in Fingerprint Images using Ridge Model Tracking</b> .....	259
<i>Nathaniel J. Short, A. Lynn Abbott, Michael S. Hsiao, Edward A. Fox</i>	
<b>Use of Polynomial Classifiers for On-line Signature Recognition</b> .....	265
<i>Emanuele Maiorana, Patrizio Campisi, Daria La Rocca, Gaetano Scarano</i>	
<b>A Group of Facial Normal Descriptors for Recognizing 3D Identical Twins</b> .....	271
<i>Huibin Li, Di Huang, Liming Chen, Yunhong Wang, Jean-Marie Morvan</i>	
<b>Ear Recognition via Sparse Representation and Gabor Filters</b> .....	278
<i>Rahman Khorsandi, Steven Cadavid, Mohamed Abdel-Mottaleb</i>	
<b>Evaluation of Serial and Parallel Multibiometric Systems under Spoofing Attacks</b> .....	283
<i>Zahid Akhtar, Giorgio Fumera, Gian Luca Marcialis, Fabio Roli</i>	
<b>Transforming Animals in a Cyber-Behavioral Biometric Menagerie with Frog-Boiling Attacks</b> .....	289
<i>Zibo Wang, Abdul Serwadda, Kiran S. Balagani, Vir V. Phoha</i>	
<b>Selection and Combination of Local Gabor Classifiers for Robust Face Verification</b> .....	297
<i>Nuri Murat Arar, Hua Gao, Hazum Kemal Ekenel, Lale Akarun</i>	
<b>Automatic Segmentation of Latent Fingerprints</b> .....	303
<i>Heeseung Choi, Maurilio Boaventura, A. G. Boaventura, Anil K. Jain</i>	
<b>Hallucinating Faces in the Dark</b> .....	311
<i>Sasikanth Bendapudi, Khoa Luu, Marios Savvides</i>	
<b>Differentiating Duchenne from Non-Duchenne Smiles Using Active Appearance Models</b> .....	319
<i>Jason Vandeventer, Eric Patterson</i>	
<b>Learning Sparse Kernel Machines with Biometric Similarity Functions for Identity Recognition</b> .....	325
<i>Battista Biggio, Giorgio Fumera, Fabio Roli</i>	
<b>Analysis of Partial Least Squares for Pose-Invariant Face Recognition</b> .....	331
<i>Mika Fischer, Hazum Kemal Ekenel, Rainer Stiefelhagen</i>	
<b>Synthetic Eye Images for Pupil Dilation Mitigation</b> .....	339
<i>Robert Hasegawa, Kevin W. Bowyer, Patrick J. Flynn, Estefan Ortiz, Louise Stark, Ken Hughes</i>	
<b>On Iris Camera Interoperability</b> .....	346
<i>Sunpreet S. Arora, Mayank Vatsa, Richa Singh, Anil Jain</i>	
<b>Introduction of Cylinder Quality Measure into Minutia Cylinder-Code Based Fingerprint Matching</b> .....	353
<i>M. Hamed Izadi, Leila Mirmohamadsadeghi, Andrzej Drygajlo</i>	
<b>Temporal Analysis of Fingerprint Impressions</b> .....	359
<i>Nathaniel J. Short, A. Lynn Abbott, Michael S. Hsiao, Edward A. Fox</i>	
<b>Rejecting Pseudo-Faces using the Likelihood of Facial Features and Skin</b> .....	365
<i>Eslam Mostafa, Ahmed El-Barkouky, Ham Rara, Aly Farag</i>	
<b>Passive Single Image-based Approach for Camera Steering in Face Recognition at-a-Distance Applications</b> .....	371
<i>Eslam Mostafa, Moumen Elmelegy, Aly Farag</i>	
<b>Hierarchical Fusion for Matching Simultaneous Latent Fingerprint</b> .....	377
<i>Anush Sankaran, Mayank Vatsa, Richa Singh</i>	
<b>Can Facial Cosmetics Affect the Matching Accuracy of Face Recognition Systems?</b> .....	391
<i>Antitza Dantcheva, Cunjian Chen, Arun Ross</i>	

<b>2.5D Gait Biometrics using the Depth Gradient Histogram Energy Image</b> .....	399
<i>Martin Hofmann, Sebastian Bachmann, Gerhard Rigoll</i>	
<b>Mitigating Effects of Plastic Surgery: Fusing Face and Ocular Biometrics</b> .....	404
<i>Raghavender Jillela, Arun Ross</i>	
<b>Face Recognition CAPTCHA</b> .....	412
<i>Gaurav Goswami, Richa Singh, Mayank Vatsa, Brian Powell, Afzel Noore</i>	
<b>Combining Match Scores with Liveness Values in a Fingerprint Verification System</b> .....	418
<i>Emanuela Marasco, Yaohui Ding, Arun Ross</i>	
<b>Iris Boundaries Segmentation Using the Generalized Structure Tensor.</b>	
<b>A Study on the Effects of Image Degradation</b> .....	426
<i>Fernando Alonso-Fernandez, Josef Bigun</i>	
<b>Author Index</b>	