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GUEST EDITORIAL

25th ICPR—Real-time Visual Surveillance as-a-Service (VSaaS) for smart security solutions

With the advent of ever-fast computing, real-time processing of visual data has been gaining importance in the field of surveillance. Also, automated decision-making by visual surveillance systems has been contributing to a huge leap in the capability of such systems, and of course their relevance in social security.

This special issue aimed to discuss cloud-based architectures of surveillance frameworks as a service. Such systems, especially when deployed to work in real-time, are required to be fast, efficient, and sustainable with a varying load of visual data.

Four papers were selected for inclusion in this special issue.

1 | SYNTHETIC FINGERPRINT GENERATION

Wyzykowski et al. present an approach to synthesize realistic, multiresolution and multisensor fingerprints. Based in Anguli, a handcrafted fingerprint generator, they were able to obtain dynamic ridge maps with sweat pores and scratches. Then, a CycleGAN network was trained to transform these maps into realistic fingerprints. Unlike other CNN-based works, this framework is able to generate images with different resolutions and styles for the same identity. Finally, authors conducted a human perception analysis where 60 volunteers could hardly differentiate between real and high-resolution synthesized fingerprints.

2 | ANOMALY DETECTION

Pawar and Attar address the problem of detection and localization of anomalies in surveillance videos, using pipelined deep autoencoders and one-class learning. Specifically, they used a convolutional autoencoder and sequence-to-sequence long short-term memory autoencoder in a pipelined fashion for spatial and temporal learning of the videos, respectively. In this setting, the principle of one-class classification for training the model on normal data and testing it on anomalous testing data was followed.

3 | IRIS BIOMETRICS

Tawfik Mohammed et al. describe a framework, implemented in a RAD (Rapid Application Development) paradigm, for performing iris recognition tests, based in the well-known Daugman's processing chain. They start by segmenting the iris ring using the Integro-differential operator, along with an edge-based Hough transform to isolate eyelids and eyelashes. After the normalization of the data (pseudo-polar domain), the features are encoded using 1D log Gabor kernel. Finally, the matching step is carried out using the Hamming distance.

4 | POSE ESTIMATION

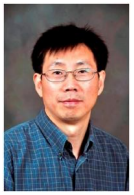
Barra et al. describe an approach for automated head pose estimation that stems from a previous Partitioned Iterated Function Systems (PIFS)-based approach providing state-of-the-art accuracy with high computing cost and improve it by means of two regression models, namely Gradient Boosting Regressor and Extreme Gradient Boosting Regressor, achieving much faster response and an even lower mean absolute error on the yaw and roll axis, as shown by experiments conducted on the BIWI and AFLW2000 datasets.

AUTHOR BIOGRAPHIES

Michele Nappi, B.Sc. (1991), M.Sc. (1997) and Ph.D. (1997) is a full professor at the Department of Computer Science, University of Salerno. Author of more than 200 papers in peer review international journals, international conferences and book chapters, He is co-editor of several international books. His research interests include pattern recognition, image processing, image compression and indexing, multimedia databases and biometrics, human computer interaction, vr\ar. Dr. Nappi serves as associate editor and managing guest editor for several international journals. He is team leader of the

Biometric and Image Processing Lab (BIPLAB) and received several international awards for scientific and research activities. IEEE Senior Member, GIRPR/IAPR Member, He has been the President of the Italian Chapter of the IEEE Biometrics Council.

Hugo Proença, B.Sc. (2001), M.Sc. (2004) and Ph.D. (2007) is a Full Professor at the Department of Computer Science, University of Beira Interior and has been researching mainly about biometrics and visual-surveillance. He was the coordinating editor of the IEEE Biometrics Council Newsletter and the area editor (ocular biometrics) of the IEEE Biometrics Compendium Journal. He is a member of the Editorial Boards of the Image and Vision Computing, IEEE Access and International Journal of Biometrics. Also, he served as Guest Editor of special issues of the Pattern Recognition Letters, Image and Vision Computing and Signal, Image and Video Processing journals. He is an IEEE Senior Member.



Guodong Guo, West Virginia University, USA. He authored a book, "Face, Expression, and Iris Recognition Using Learning-based Approaches" (2008), co-edited two books, "Support Vector Machines Applications" (2014) and "Mobile Biometrics" (2017), and co-authored a book, "Multi-Modal Face Presentation Attack Detection" (2020). He published about 200 technical papers, and he is the inventor of the visual BMI (body mass index) estimation technique. His research interests include computer vision, biometrics, machine learning, and multimedia. He is an AE of several journals, including IEEE Trans. on Affective Computing, journal of Visual Communication and Image Representation, and the journal of IET Biometrics. He is an IEEE Senior Member.

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