Selected Best Works From Automated Face and Gesture Recognition 2019

Ross Beveridge, Mohamed Daoudi, Catherine Pelachaud, and Richa Singh

THE 14TH IEEE International Conference on Automatic Face and Gesture Recognition (FG 2019) was held in Lille, France, 14–18 May 2019. The IEEE conference series on Automatic Face and Gesture Recognition is the premier international forum for research in image and video-based face, gesture, and body movement recognition. Organizers of FG 2019 invited a selection of the best-reviewed papers from the conference to submit extended versions of their work to a special issue of the IEEE TRANSACTIONS ON BIOMETRICS, BEHAVIOR AND IDENTITY SCIENCE. These submissions went through the normal peer-review process at TBIOM, including in some instances substantial further revision and improvement, leading to the set of papers appearing in this issue.

The paper "Online Dynamic Hand Gesture Recognition Including Efficiency Analysis" evaluates a new approach to the problem of recognizing hand gestures in a video stream. The paper "Evaluation and Visualization of Driver Inattention Rating from Facial Features" looks at the important application of detecting inattention by the driver of a vehicle, and finds that personalization to the individual driver can improve results by a significant amount. The paper "FCSR-GAN: Joint Face Completion and Super-resolution via Multi-task Learning" proposes a deep generative adversarial network for performing joint face completion and face super-resolution in a multi-task learning framework. The paper "Tree-gated Deep Mixture-of-Experts For Pose-robust Face Alignment" develops a new approach to the fundamental early step of aligning the features of a detected face, emphasizing the ability to handle less restricted input images. The paper "Video Face Recognition Using Siamese Networks with Block-Sparsity Matching" presents a new advance in the difficult problem of still-to-video face recognition with a single sample per person. The paper "Video Face Clustering with Self-Supervised Representation Learning" introduces an unsupervised method for feature refinement with application to video face clustering, focused on distilling the essential information, identity, from the representations obtained using deep pre-trained face networks. The paper "Crossing Domains for AU Coding: Perspectives, Approaches, and Measures" tackles the interesting question—How well do action unit detectors for facial expressions transfer to domains in which they have not been trained?

We thank all of the reviewers for their conscientious efforts as well, and of course we thank the authors for submitting their work to TBIOM. We hope that all readers will enjoy these insights into the state of the art in selected topics in the area of automatic face and gesture recognition.

ROSS BEVERIDGE
Department of Computer Science
Colorado State University
Fort Collins, CO 80523 USA
e-mail: ross.beveridge@colostate.edu

MOHAMED DAOUDI
Rue G. Marconi
IMT Lille Douai, CRIStAL
59650 Villeneuve-d'Ascq, France
e-mail: mohamed.daoudi@imt-lille-douai.fr

CATHERINE PELACHAUD
CNRS-ISIR
Sorbonne University
75005 Paris, France
e-mail: catherine.pelachaud@upmc.fr

RICHA SINGH
Department of Computer Science
Indian Institute of Technology Jodhpur
Karwar, Rajasthan 342037, India
e-mail: richa@iitj.ac.in

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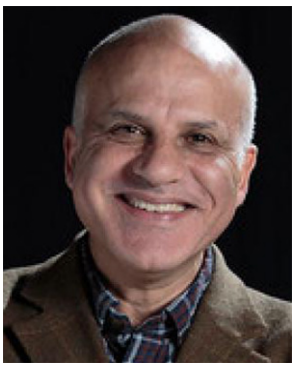
Ross Beveridge is a Professor with the Department of Computer Science, Colorado State University. He has published over 150 refereed papers broadly in the area of computer vision. These papers have been cited over 8000 times. Working closely with Jonathon Phillips at NIST, he pioneered new approaches to characterizing how human face recognition algorithm performance varies with demographics attributes, such as age, race, and gender. His current work is motivated by the promise of visually aware agents. Working jointly with colleagues at Brandeis University he has overseen the development of an AI agent able to interact with a person using both speech and sight. The agent responds to visual cues, including facial expressions and gestures, and engages in conversation related to a shared physical problem-solving task. Under his direction, the CSU Vision Lab has a long tradition of releasing open-source software. This work includes the 2013 Challenge of Face Recognition From Digital Point-and-Shoot Cameras, and older legacy work supplying open-source tools such as the CSU Face Identification Evaluation System. This legacy system, released in 2001, along with other more recently released open-source software packages, have been downloaded by over 30 000 users.



Mohamed Daoudi (Senior Member, IEEE) received the Ph.D. degree in computer engineering from the University of Lille in 1993. He is a Full Professor of computer science with IMT Lille Douai and CRIStAL (CNRS 9189). His research interests include pattern recognition and computer vision, 3-D face recognition, and facial expression recognition. He has published over 150 journal and conference articles in the above areas. He is an Associate Editor of *Image and Vision Computing*, the IEEE TRANSACTIONS ON MULTIMEDIA, and the *Journal of Imaging*. He is serving as the General Chair of the 2019 IEEE International Conference on Automatic Face and Gesture Recognition. He is a fellow of IAPR.

Catherine Pelachaud received the Ph.D. degree in computer science from the University of Pennsylvania, Philadelphia, PA, USA, in 1991. She is currently a CNRS Director of research in the laboratory ISIR, Sorbonne University, where her research encompasses socially interactive agents, and modeling of nonverbal communication and expressive behaviors. She has authored more than 200 articles. She has co-edited several books on virtual agents and emotion-oriented systems. She has participated in the organization of international conferences, such as IVA, ACII, and AAMAS, virtual agent track. She was the recipient of four best papers awards of IVA. She is the recipient of the ACM–SIGAI Autonomous Agents Research Award in 2015 and was honored with the title Doctor Honoris Causa of the University of Geneva in 2016. Her Siggraph'94 paper received the Influential Paper Award of the International Foundation for Autonomous Agents and Multiagent Systems. She is and was an Associate Editor of several journals, including the IEEE TRANSACTIONS ON AFFECTIVE COMPUTING, the *ACM Transactions on Interactive Intelligent Systems*, and the *International Journal of Human–Computer Studies*.

Richa Singh received the Ph.D. degree in computer science from West Virginia University, Morgantown, WV, USA, in 2008. She is currently a Professor with IIT Jodhpur, India, and an Adjunct Professor with IIIT Delhi and West Virginia University. She co-edited the book *Deep Learning in Biometrics* and has delivered tutorials on deep learning and domain adaptation at ICCV 2017, AFGR 2017, and IJCNN 2017. Her areas of interest are pattern recognition, machine learning, and biometrics. She was a recipient of the Kusum and Mohandas Pai Faculty Research Fellowship at the IIIT Delhi, the FAST Award by the Department of Science and Technology, India, and several best paper and best poster awards at international conferences. She has also served as the Program Co-Chair of AFGR2019 and BTAS 2016, and the General Co-Chair of ISBA 2017. She is currently serving as the Program Co-Chair of IJCB 2020 and the General Co-Chair of FG 2020. She is also the Vice President (Publications) of the IEEE Biometrics Council. She is an Associate Editor-in-Chief of *Pattern Recognition*, and an Area/Associate Editor of several journals. She is a fellow of IAPR and a Senior Member of ACM.