

KEYNOTE TALK

Monday, October 7, 2019 at 9am
(Sand Harbor II)

Dense 3D face correspondence for deep 3D face recognition and medical applications

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Abstract: In this talk, I will present our research on dense 3D face correspondence which is a core problem in facial analysis for many applications such as biometric identification, symptomatology for the diagnosis of Autism and Obstructive Sleep Apnoea and planning for facial reconstructive surgery. From a morphometric point of view, we are interested in performing dense correspondence based purely on shape without using texture. This makes the problem challenging but the correspondences and subsequent analyses more precise. The idea is to start from a sparse set of automatically detected corresponding landmarks and propagate along the geodesics connecting nearby points. By anchoring on the most reliable correspondences for propagation, accurate dense correspondences are iteratively established between hundreds of faces without using a prior model. Thus, we are able to construct population specific deformable face models for symptomatology and patient specific morphs to facial norms for reconstructive surgery. Moreover, by establishing dense correspondences between different facial identities and expressions, we synthesize millions of 3D faces with varying identities, expressions and poses to learn a deep Convolutional Neural Network (FR3DNet) for large scale 3D face recognition. FR3DNet achieves state-of-the-art results, outperforming existing methods in open-world and close-world face recognition, on a dataset four times the largest dataset reported in the existing literature.



Speaker Bio-Sketch: Ajmal Mian is a Professor of Computer Science at The University of Western Australia. He has received two prestigious fellowships and several research grants from the Australian Research Council and the National Health and Medical Research Council of Australia. He was the West Australian Early Career Scientist of the Year 2012 and has received several awards including the Excellence in Research Supervision Award, EH Thompson Award, ASPIRE Professional Development Award, Vice-chancellors Mid-career Research Award, Outstanding Young Investigator Award, the Australasian Distinguished Doctoral Dissertation Award and various best paper awards. He is an Associate Editor of IEEE Transactions on Image Processing and the Pattern Recognition journal. He is a General Co-Chair of the DICTA 2019. He was a General Co-Chair of ACCV 2018, Program Co-Chair of DICTA 2012 and Area Chair of WACV 2019, WACV 2018, ICPR 2016 and ACCV 2014. Ajmal Mian has supervised 12 PhD theses to completion and has published over 170 scientific papers in prestigious journals and conferences including PAMI, TNNLS, TIP, PR, TGRS, TBME, CVPR, ICCV and ECCV. His research interests are in computer vision, machine learning, 3D shape analysis, facial recognition and video analysis.