

Selected Works From Automated Face and Gesture Recognition 2020

THE 15th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2020) was held online between 16 and 20 November 2020. 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. The program chairs of FG 2020 invited the authors of outstanding papers from over 75 accepted papers to submit extended versions of their work to a special issue of the IEEE TRANSACTIONS ON BIOMETRICS, BEHAVIOR AND IDENTITY SCIENCE, based on topical suitability, reviewer scores, and area chair comments. 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 three papers appearing in this issue.

The first of these papers, “Depth-Based 3D Face Reconstruction and Pose Estimation Using Shape-Preserving Domain Adaptation,” combines real and synthetic 3D face images in a domain adaptation framework for identity, pose, and expression estimation. It uses the popular CycleGAN as a starting point to propose a system that can reconstruct a 3D face from a single depth map as the input.

The second paper of the issue, “MeTRAbs: Metric-Scale Truncation-Robust Heatmaps for Absolute 3D Human Pose Estimation,” is a contribution that uses heatmaps for estimation of joints in 3D human pose estimation. It deals with many issues relevant for robustness in such systems, including scale and absolute position (i.e., metric scale) recovery, multi-person pose estimation, as well as dealing with joints that are

outside the actual image. A high accuracy is obtained by using a ResNet based backbone architecture.

The third paper, “Head2Head++: Deep Facial Attributes Re-Targeting,” advances the state of the art on face and head re-enactment, by which head movements, facial expressions, and eye gaze features are transferred from a source video of a person to a target person. The results are realistic, and qualitatively illustrated through a supplementary video.

We thank the authors for submitting their work to TBIOM, and we thank the reviewers and area chairs for their comments and suggestions during both FG and TBIOM review processes. We hope the readers will find useful insights in these papers at the cutting edge of automatic analysis of human faces and behaviors.

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