

A Feasible Face Pose Estimation by Evaluating 3D Facial Feature Vectors from 2D Features

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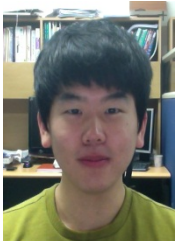
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Abstract— Estimating head pose correctly from input face images is important for developing applications of vision-based human computer interaction. In this paper, we present a robust 3D head pose estimating approach using a skin-color model and haar-like feature detection. Using the detected primitive facial features of an obtained facial region, the corresponding 3D head pose of the 2D face is estimated. As for facial region detection, we adopt YC_bC_r model for skin-color model. For facial feature detection from the detected facial region, Haar-like feature is utilized along with AdaBoost learning. The 3D head pose of an input face image can be obtained by evaluating 3D information of facial features from the detected 2D eye-points and nose. Without any constraints for head pose estimation such as using initial face pose template of a frontal face, our proposed method can estimate face pose and retarget the motion to a 3D face model in real time. From the experiments, the proposed approach shows robustness in face and facial feature detection and eventually produces better results in estimating head pose rather than simply using Haar-like feature for both face and facial feature detection.

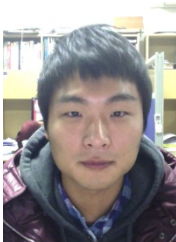
Keyword— Head pose estimation, Skin-color model, Haar-like feature, AdaBoost algorithm, Face detection



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