عنوان مقاله:

Robust Pose-Invariant Eye Gaze Estimation Using Geometrical Features of Iris and Pupil Images

محل انتشار:

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خلاصه مقاله:

The Gaze Estimation problem, due to its manifold applications including human computer interaction (HCI) especially for the handicapped, has been a topic of research since many years ago. Recently, the non-intrusive methods, based on image processing, are more addressed which are obtained bydevelopment of the technology and can become more applicable. In this paper, we propose a non-intrusive algorithm for eye gaze estimation that works with video input from an inexpensivecamera and without special lighting. The main contribution of this paper is to propose a new geometrical model for eye regionthat only requires image of one iris for gaze estimation. Essential parameters for this system are the best fitted ellipse of iris andpupil center. A novel algorithm is also proposed to estimate the best fitted ellipse of iris which uses most of iris boundary pointsand thus achieves high accuracy. Moreover, this algorithm, unlike previous ones, poses no pre-assumptions on the head pose. All in all, the achievement of this paper is the robustness of the proposed system to the head pose variations. The performance of the method has been evaluated on both synthetic and real images leading to errors of 2.12 and 3.48 degrees, respectively

کلمات کلیدی:

component; Gaze estimation, Projective geometry, Ellipse fitting, Pupil center