Abstract

Accurate pupil tracking plays an important role in many sophisticated applications such as HCI, behavioral research, driver's fatigue detection and marketing. In this study particle filter helps us to track pupil in video frames under active IR illumination. The proposed method can be categorized as follow; The eye video is captured by a HMD camera, then precise location of the pupil is determined by thresholding and applying Snake algorithm, next the contour of the detected pupil is modeled with an ellipse, finally the parameters of the ellipse such as center coordinates and major & minor axixs are tracked by particle filter. Experimental results of the proposed method which applied to 20 different subjects, demonstrate the accuracy of the proposed method.

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