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Eye Tracking by Image Processing for Helping Disabled People

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Nowadays eye gaze tracking has wide range of applications in human computer interaction. One of these applications is using trajectory of eye gaze instead of foot or hand for disabled people to execute some commands. Various methods have been proposed, some of this methods can successfully track the eye gaze. However, they always require specific circumstances, training or are not capable of real-time performance. In this paper, we proposed a framework to track eye gaze in real-time by using a simple and low cost webcam mounted on ordinary laptops. This process widely exploits the weighted normalized correlation function in an adaptive template matching approach. The implemented system tracks the face and also extracts some eye features such as iris position, eye corners and sclera region in eyes, in real time. These features are used in eye gaze estimation. Also the influence of illumination changes, background alterations, different faces and face movements is minimized as much as possible. The implemented gaze tracking system is able to control the motions of mouse cursor and click on an onscreen keyboard in real time.

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