Novel Automatic Eye Detection and Tracking Algorithm

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Abstract

The eye is not only one of the most complex but also the most important sensory organ of the human body. Eye detection and eye tracking are basement and hot issue in image processing. A non-invasive eye location and eye tracking is promising for hands-off gaze-based human–computer interface, fatigue detection, instrument control by paraplegic patients and so on. For this purpose, an innovation work frame is proposed to detect and tracking eye in video sequence in this paper. The contributions of this work can be divided into two parts. The first contribution is that eye filters were trained which can detect eye location efficiently and accurately without constraints on the background and skin colour. The second contribution is that a framework of tracker based on sparse representation and LK optic tracker were built which can track eye without constraint on eye status. The experimental results demonstrate the accuracy aspects and the real-time applicability of the proposed approach.

Keywords: Eye detection; Eye tracking; Sparse matrix; Image processing

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