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Eye Movements during Scene Understanding for Biometric Identification

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Description

Asking people to gaze into one's eyes in order to catch their true emotions is a practise that is extremely prevalent. However, research has generally shown that analysing people's eyes can help us accomplish much more. Biometrics involving the eyes the biometrics were entered in a reasonably recent period of time. Comparable to the most common fingerprint and facial recognition scenarios. Notwithstanding due to this, they quickly attained a prominent position. Although iris is the most scrutinised and we must ignore retina recognition, a popular biometric that is far less common, but nonetheless the user-friendly nature of the new gaze-based identification technology, which is the most widely discussed recent research on this situation.

As for practical use, they provide different and complementary advantages. Iris and retinal patterns are characterized by a low occurrence of false positives, low false negative rates, high reliability because no two people have the same iris or retinal pattern, and speed in the identification of the subject. In turn, particular recognition becomes particularly useful when iris recognition cannot be implemented, e.g., in case of blind people or for people affected by cataract, or to improve accuracy when iris images are acquired in non-optimal conditions. This special issue's goal is to provide researchers interested in detection and recognition techniques based on all eye-related biometrics with a forum where they may discuss all facets of their closely linked research activity. Insight on Eye Biometrics is the first special issue to collect contributions from researchers working on various eye biometrics, despite the fact that many valuable contributions on eye biometrics, such as iris pattern, retinal pattern, particular regions, gaze, and eye tracking have already been published in the past. It is intriguing to draw attention to the substantial amount of publications that are devoted to modern strategies based on eye movements.

They are currently the subject of extensive study because they are newcomers. The authors of this study put a lot of emphasis on recognition while neglecting detection and feature extraction issues. Learning outcomes and, by extension, classification outcomes may be considerably impacted by the complexity of the characteristics employed to code the iris pattern. A fair and objective shared benchmark, which is sadly absent in the studies that are now available, would be necessary for a complete cross-comparison of feature complexity vs. learning effectiveness for various learning algorithms. Moreover, the lack of adequate implementation details or trustworthy shared code makes it now exceedingly difficult to replicate methodologies and studies. When tackling iris recognition, the first problem to solve is segmentation. The complex iris pattern, the presence of the pupil, and disturbing elements that are present in uncontrolled conditions, like eyelashes, light reflections, partial occlusions, motion blur, etc., make this a critical step.

All the following processing is affected by its results. "Markov Chains for unsupervised segmentation of degraded iris images for person recognition" proposes to address this problem by Hidden Markov Chain for unsupervised iris segmentation. The authors propose novel image scanning procedures and initialization steps for implementing this model. They build a novel recognition system by adding this unsupervised iris segmentation module as a pre-processing in the open-source recognition platform OSIRIS-V4. The paper "OSIRIS: An Open Source Iris Recognition Software" by Othman, , namely OSIRIS, that has been implemented in the framework of the BioSecure Association. The whole Bio Secure framework is aimed to provide a common reference to the scientific community. OSIRIS v4.1 is the last version of the OSIRIS platform. This tool consists in four main modules implementing: segmentation, normalization, feature extraction and template matching. In this paper the authors describes the main features of the three versions of the OSIRIS system. Moreover they also report the improvements in performance obtained by OSIRIS v4.1 on the two public iris databases ICE 2005 and CASIA-IrisV4-Thousand [1-5].

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Conflict of Interest

The Author declares there is no conflict of interest associated with this manuscript.

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