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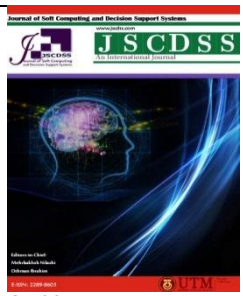

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Iris Recognition System based on Canny and LoG Edge Detection Methods

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Abstract

Iris recognition has obtained an incredible consideration in a variety of fields such as border areas, industrial areas, security susceptible areas and so on. In the eye, sclera and iris are utilized since the prior inputs employing to identify the eye with various systems such as segmentation incorporating with various versions. The internal edge in the eye isn't an ordinary circle that might produce difficulty in exact recognition. The image has a smaller amount texture after that it causes iris legacy in segmentation step. In order to develop a good iris authentication algorithm for individual identification, the presented paper recognize iris images by utilizing two edge detection approaches like Canny and Laplacian of Gaussian (LoG) to reduce the noisy data and detect the edges. The experimental results demonstrate that Canny edge detector can better detect the edges than LoG.

Keywords: Iris recognition, Canny edge detection, LoG (Laplacian of Gaussian) edge detection

1. Introduction

Unique and trustworthy people identification is really a hard problem. The significance of security is definitely an indisputable fact that has an important role in our communities. Governments are prompt to make tighter security measures by having the security's high level. Without a doubt, using biometric attributes creates a basic portion of governments' attempts in order to provide countrywide security. A biometric template can provide an effective, normalized and extremely discriminating feature's depiction by utilizing distinctive physical (e.g. hand profile, palm vein, fingerprints, DNA testing, face, iris, palm print, retinal scanning, etc.) and behavioral (e.g. gait measurement, voice, keystroke, and signature) attributes of every people which will subsequently be in comparison with different templates to ascertain identity (Birgale and Kokare, 2009). Almost all biometric systems permit two operation modes. The enrollment mode in order to add templates into a database, and also an identification mode, in which a template is made for a person then the match will be looked for in the pre-enrolled templates database (Masek, 2003). Thus, the possibility of any two individual having the identical attribute is going to be minimum and be simply taken to provide comfort for the user, and cause not to happen feature's misrepresentation. Behavioral methods are generally much less trusted compared to physical methods since they're simpler to copy (Jain et al., 1999). Physical characteristics tend to be a more reliable method in biometrics. Therefore, iris recognition is getting a lot of consideration and extended in industrial recognition systems (Jain et al., 2004).

Iris recognition recognizes people by utilizing the distinctive iris pattern info and contrasting it with database's reference. For example, it is stable during a person's lifetime and it can't change surgically. Its accuracy rate is higher in comparison with different biometric recognition approaches like voice recognition, fingerprint recognition, vein recognition, face recognition, etc. (Daugman, 1993; Ma et al., 2003; Wildes, 1997). As texture of iris pattern does not have any links with a person's genetic structure and because it is created by disorderly processes, it can work in verification and identification modes (Muron and Pospisil, 2000).

Iris is usually well protected interior organ that utilized to denote the thin rounded diagram and the colored part which is located at the rear of the cornea and the human eye's lens (Daughman, 1988) (see **Fig. 1**). The sclera is the eye's exterior part that is occupied just about 30% eye's area and pupil is located in the central part of the eye which include 5% eye's area. The operation of the iris would be to control the light's amount getting into the pupil. The iris's average diameter is 12 mm and the size of the pupil can differ between 10 to 80 percent of the diameter of the iris.