

SOFTWARE MODULE FOR IRIS SELECTION IN THE IMAGE

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The selection of the iris in the image is a search in the image a relatively dark object close in shape to a circle containing a concentric darker object (pupil) inside. One more condition is added in most systems: inside the pupil there must be a bright glare of a certain shape (glare from the illuminator). This problem can be solved in many ways for example by searching for concentric circles using the Hough transform or using a correlator to search a glint of a given shape with subsequent detection of the contours of the pupil containing this glint and then of the iris concentric to pupil [1]. Specific is the presence of eyelids in most cases covering the upper and lower parts of the iris. Some systems such as Iridian explicitly highlight eyelids and discard false data from covered areas. As a result of the work a software module for iris detection in the image was developed. The work of this module consists of the following main stages.

1. Image erosion. Allows you to enhance the border of the transition of brightness in the image and make the outline of the iris clearer.

2. Median filtering. Used to reduce noise in the image particularly around the outline of the iris.

3. Binarization by the Canny boundary detection method. Allows you to get the contours of the iris.

4. Selection of circles using the Hough algorithm [2].

The software module was implemented by the C++ programming language in the Visual Studio environment using the Itilib library. This module allows to work with images of different formats, such as bmp, jpeg, and different sizes.

Literature

1. Gonzalez R., Woods R. Digital Image Processing. Moscow: Technosfera, 2005.

2. Ecabert O., Jean-Philippe Thiran J.-P. Adaptive Hough Transform for the Detection of Natural Shapes Under Weak Affine Transformations // Pattern Recognition Letters. 2004. Vol. 25. P. 1411–1419.