

**DETERMINATION OF OPTIMAL CENTERS FOR SCANNING OF
REGULAR FIGURES' IMAGES WHEN RECOGNIZING THEM**
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Abstract

There has been proposed a method for recognition of images of flat regular figures using resolution of them from the internal spot of scanning. There are considered new forms of images representation. An algorithm on search of optimal scanning center has been proposed. A structure of images recognition device has been worked up.

Key words: image, center of scanning, angle of discredit, contour.

1. Introduction

On creating modern intellectual systems a use of effective work methods for treatment and recognition of images is of big importance [1-10], which is widely used in different spheres of science and techniques (robotics, space, communication, telecommunication, medicine, transportation and others).

At the present there is developed a plenty of image treatment and recognition methods based upon various scientific approaches which have certain advantages and imperfections [11-21].

The work considers a method of image recognition for flat figures based upon its evolvement and subsequent treatment.

By way of images on entry which are objects for recognition there have been used secluded salient figures which are scanned into internal region with the center of scanning established in advance.

The task was determination of optimal center on scanning of images and geometrical shape of a figure based upon findings.

Within an image projected on receiving carrier a spot is chosen and distances between it and contour spots are calculated. All the distances are calculated on the straight lines passing through the spot chosen and oriented between each other in series under the certain angle in it (fig. 1).

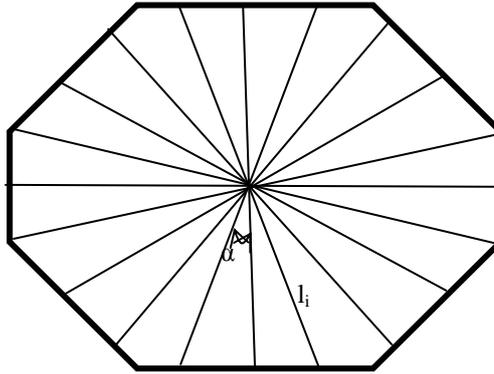


Fig. 1. An example of scanning and figure image at the spot O.

Each scanning step is realized by the given angle α . Of the calculated lengths l_i there are formed angles of discrimination α and by the vertical - l_i (fig. 2).

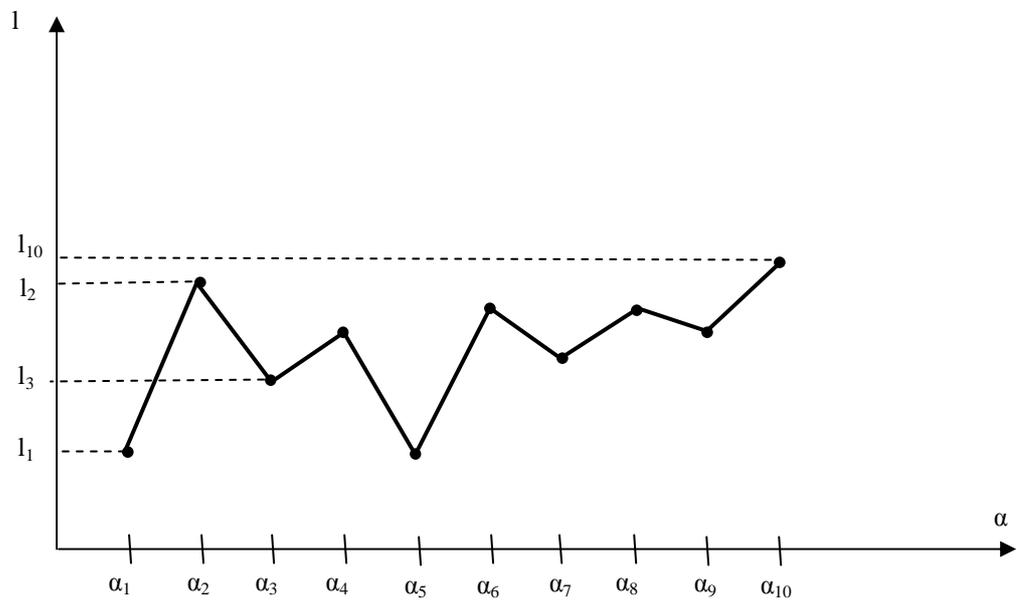


Fig. 2. An example of unfolded image by the method of internal scanning $\alpha_i = i * \alpha =$ the common angle of scanning.

At the same time the diagram shapes can change. All depends on initial choice of scanning direction. For checking up the identity of two images there are fulfilled cyclic shift with congruence tact by tact. An example of the shift to the right at one discrete value α for our image (fig 2) shown in the fig. 3.

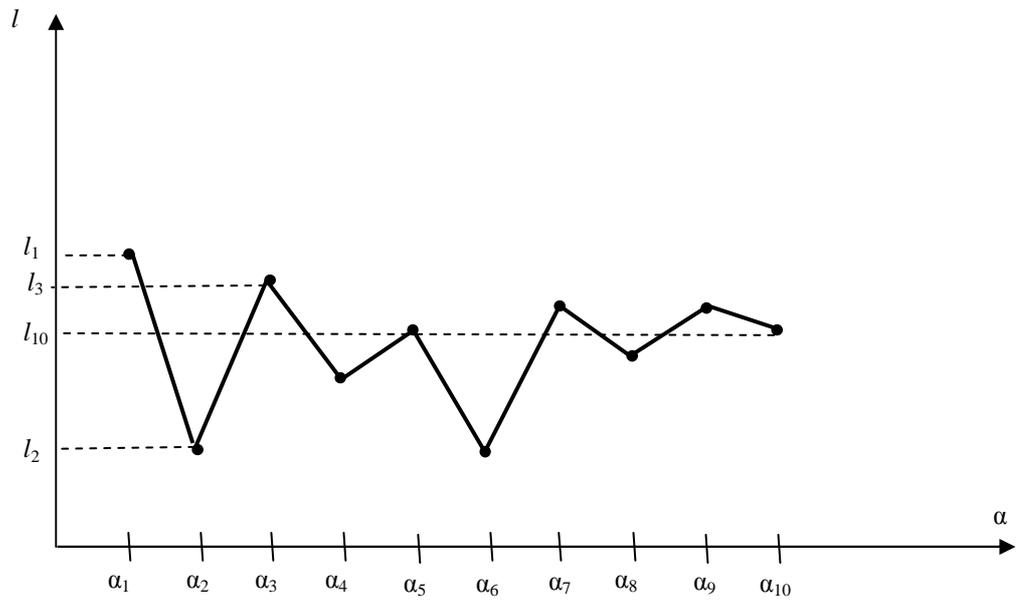


Fig. 3. An example of a graphic shift of unfolded image at one position to the right. Examples of graphic presentation of the standard figures are introduced in the fig.4.

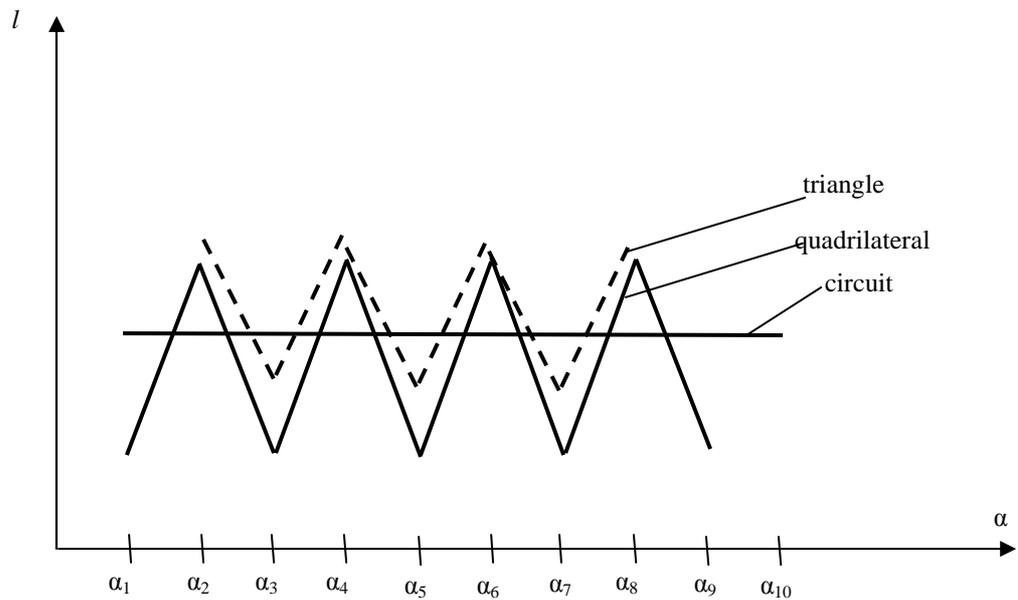


Fig. 4. Examples of graphic presentation of the standard figures.

To define a scanning spot exactly isn't possible always. Therefore series of additional operations are carried out which include calculations of the sum total of the lengths l_i and also there are introduced some additional spots of scanning and length l_{md} mean value is calculated.

Summary

The proposed method allows exactly to identify two-dimensional salient figure due to its convenient presentation. By the way the precision of recognition rises under decreasing value α and then when $\alpha \rightarrow 0$ the sum total tends to the largest value and is equal to the square of the image. It permits calculating the square of two - dimensional secluded regions. The use of OMM and RR allows descriptions of an image on its contour and mark it out and also simplifies the process of its recognition.