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**МАТЕРІАЛИ V ВСЕУКРАЇНСЬКОЇ НАУКОВОЇ КОНФЕРЕНЦІЇ СТУДЕНТІВ,
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RECOGNITION SYSTEM OF FLAT CONVEX FIGURES BY USING DISPROPORTIONATE FUNCTION

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With the development of technologies and optimization of technological processes, it was necessary to perform and making decisions without human intervention. Processes that are associated with unilateral routine work or poses a risk to the humans it is rational to replace by machines. The construction of these machines is the first step towards the construction of different recognition systems. One of those systems is the system for recognition of flat convex figures where the recognition becomes more difficult because of changes in the sizes and rotation angles. A disproportionate function helps to solve this problem.

Disproportionation for the first order derivative function $y = f(x)$

by x is called the difference between $\frac{y}{x}$ and $\frac{dy}{dx}$. Let us it as

$$\textcircled{d}_x^{(1)} y = \frac{y}{x} - \frac{dy}{dx}. \quad (1.1)$$

Sign \textcircled{d} was chosen to describe the operation of disproportionate definition. Geometric interpretation of a disproportionate (1.1) is the difference between the tangents of two angles. The first of these is the angle between the positive direction of the axis OX and the line, which connects the origin of coordinates with a point M (x,y).

It is necessary to develop an algorithm and computer program for recognizing the analyzed flat convex figures. We have the etalons set of contour images and the analyzed image. This image is flat convex figure. Thus, it is fed to the input of the system with its scale where the value is generally unknown. Flat image can describe the function $F(x, y)$ coordinates x, y . The contour image is convenient to consider in polar coordinates. In this case, the description of the image is invariant to its rotation in the plane.

As a test case to verify the correct recognition 10 etalons will be selected, as well as the images of two figures with different scales and rotation angles will be analyzed.

Therefore, the result will be of recognition percentage between the analyzed images and etalons.