

Application of Spatial Frequency Filtering Methods to Measurements, Identification and Coding

Theoretical grounds and optical schemes for realizing different kind of mathematical transformations on image functions are given. The possibilities of applying these transformations in measurements of geometric dimensions, identification of different class random objects and in coding and decoding of information of the "zero-one" class objects are pointed out.

In the part concerning the results of measurements the problem of determining diameters of wires and widths of apertures is discussed. The method is based on obtaining a mutual correlation function of the tested object and the information enclosed in holographic memory.

As an example of identifying random fields a device to diagnose blood groups is described. The construction of segment filters of the device and preliminary results in diagnosing blood groups are given. Coding problems are limited to announcing the construction of various filters enabling to obtain the derivatives of an object function of arbitrary orders with a desired accuracy.

The possibility of applying these methods to such treatment of information in computers is indicated.

Moreover, the possibility of improving deformed photos resulting from a straight-line displacement during photographing is described. A generalized solution of this problem for an arbitrary movement of the object being photographed is given.

*) Military Technical Academy, Warsaw, Poland.