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ESTIMATES FOR VISUAL FLIGHT INFORMATION CREW UNDER THE INFLUENCE OF PSYCHOLOGICAL FACTORS

Of problem is the study of information criteria for evaluating the error processes tonal transformation and visual perception under the influence of engineering and psychological factors is known that in many famous works of specialists solved the problem of image quality. On the one hand, it is bad, because missed major opportunities of expanding our belief in the doctrine of the imagetheref

Production problems in general and its relationship to important scientific objectives through assessment of performance criteria and process precision tonal transformation and visual study of information criteria for evaluating the error processes tonal transformation and visual perception under the influence of engineering and psychological factors in the study of experimental data process modeling.

Analysis of recent studies in which a solution of the problems is that it seems impossible to solve the problems of existing methods of error evaluation processes tonal transformations, visual perception and information criteria for the study of information criteria for evaluating the error processes tonal transformation and visual perception under the influence of engineering and psychological factors. Methods of estimation accuracy for image analysis showed that incomplete, modern ideas and theories.

The study is to solve important scientific problems - the search for optimal information criterion estimation error process of becoming a tonal (Fig. 1) and visual perception (Fig. 2) has been achieved and done as testing hypotheses. Algorithm research is scientific analysis of the characteristics of interval uncertainty of any quantity that is informative, it is advisable to apply entropy interval $2\Delta\ \xi$,

$$2\Delta\ \xi = e^{H(\frac{\xi}{\xi_2})} \quad (1)$$

where $H(\xi 1 / \xi 2)$ — conditional entropy of the distribution criterion of error in determining ξ.

The problems of assessing the quality of documentation (1) and reliability of information found their solution in the systems of image analysis have been resolved and reported as testing of hypotheses. This criterion is often used with reasonable efficiency. The total amount of information defined as J, transmitted by converting image (Fig. 1) with expression

$$J = H(\xi) - H_{cp}\left(\frac{\xi}{\xi_n}\right) \quad (2)$$

where $H(\xi)$ — priori entropy values ξ; $H_{cp}(\xi / \xi_n)$ — average conditional entropy error.

Statement of main results with full justification of scientific findings made in the following way. A definition of conditional entropy of the average error made on the basis of experimental data obtained by simulation of tonal transformations (2) after the intermediate mathematical transformation of expression

$$H_{cp}\left(\frac{\xi}{\xi_n}\right)=\int_{\xi_{\min}}^{\varsigma_{\max}}\rho(\xi)H\left(\frac{\xi}{\xi_n}\right)d\xi \tag{3}$$

where $\rho(\xi)$ — function of the density distribution of values ξ; $H(\xi/\xi_n)$ — current value of the entropy error.

Process accuracy measurement systems analysis is acceptable (3), while in the information theory of measuring devices are known, it is proposed to consider the value of Q. After comparison, refinement and mathematical transformations deter-mined that it is proportional to the relative entropy pohybtsi

$$Q=\frac{\xi}{2\Delta_\eta} \tag{4}$$

Scientific results that obtained on the basis of the theory and analysis of the methodological apparatus of research presented in is as follows. The difference metrological problems of problem studied in the model analysis process (4) and coupled with the analysis of the accuracy of transformation processes images, is that to improve the signal gradational parameters ξ primary image is converted into secondary nonlinear. In metrology usually measured values and measured on average equal to each other. In our case the function $\eta = f(\xi)$, which characterizes the studied process can be quite arbitrary and more so if the error appears only in the process of transformation, it actually means only error Δ □. This precision signal conversion

$$Q=\frac{\xi\eta'}{2\Delta_\eta} \tag{5}$$

where Δ_η — measurement error.

The transition from formula (4) to (5) occurred due to the fact that the equivalent value of error known pohybtsi $\Delta\ \eta$ proposes that the only gradient transfer function η'

$$\Delta_\xi\approx\frac{\Delta_\eta}{\eta'} \tag{6}$$

For all real processes, rather than empirical models [2], which have a limited range of conversion, the initial and final parts of the interval $\eta'\to 0$. Therefore, changing the accuracy of transformation within the interval for various processes has, in sufficient degree, uniform appearance, namely kolokolopodibnoyi function [4].

Personal contributions of authors is as follows. During the simulation found that the plots for the linear transformation (6), which η'= Const, the accuracy of the process depends on the error $\Delta\ \eta$ and at $\Delta\ \eta\approx$ Const is constant and the characteristic curve has the form of (Fig. 1) . Then tonal transformation is proposed to estimate the number of gradations allocated to the process in the effective range of (Fig. 2) with the expression

$$G=\int_{\xi_1}^{\xi_2}Q\cdot d(\ln\xi) \tag{7}$$

The value of G (7) is called tonal resolution, which is defined in the process of modeling image analysis, and graphically as the area under the curve value of the logarithmic characteristic precision. Total number of gradations ε, transmitted in the modeling analysis for a particular image is determined

$$\varepsilon=e^J \tag{8}$$

The value of ε (8) offer a resolution to call an information analysis process. It depends, as it follows from above, from the statistical characteristics of the image signal and the effect of errors in the process of tonal image conversion using the developed device that (Fig. 1).

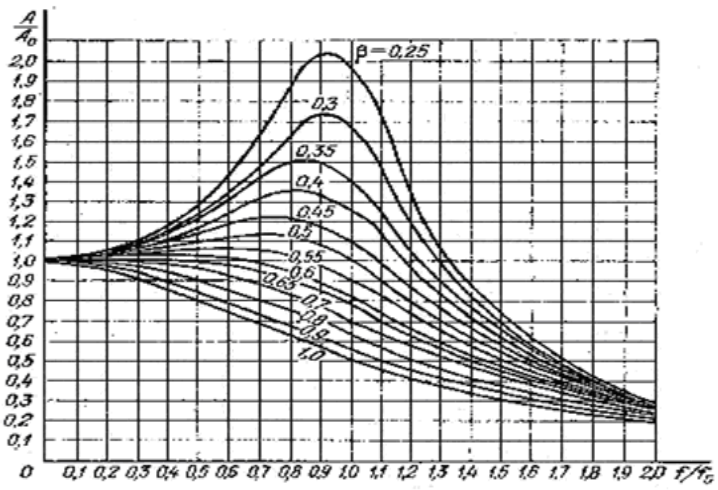

Fig. 1. Information criteria for evaluating the error processes. Information evaluation criteria tonal transformation. Where: A/A0 - the ratio of error processes visual Facilitation of Adaptation

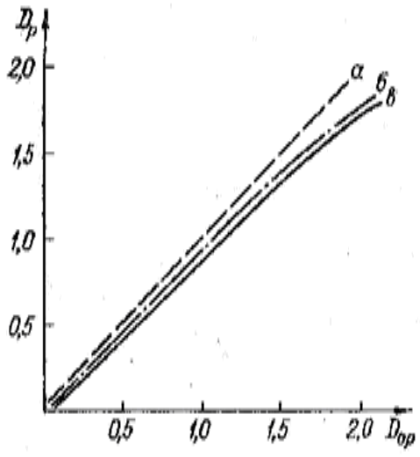

Fig. 2. Information criteria for error; f/f0 - value concept. Where: the process is investigated by frequencies for tonal conversion for different types of analysis using optical-tight media, characterized by coefficients β. Total Dp and Dop to different screens (a, b, c).

Conclusion

The first proposed alternative approach to solving problems of k image analysis on the theory that is based on information criteria, error estimates tonal transformation processes and visual perception, the study of information criteria for evaluating the error processes tonal transformation and visual perception under the influence of engineering and psychological factors. If the initial distribution of the image different from the equal probability, this means that the reserve was to increase the value of e1 to e2, ie G1 (of the eye in the process) <G2 (of the eye after the process) by reducing the interval svitloty secondary image in comparison with primary . However, even in this condition, if G1> G2 it is possible to realize when e2 = G2> e1. Installed on the results of experiments that when G2 <e1, improve secondary flight information in image compared to the original is not possible. Thus, in all considered cases should strive to bring the information capacity of perception of the secondary image to the ability of human eye perception, so that e2 → G2.

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