$$= \left\{\left\{\left\{MK_{1,1,1}, MK_{1,1,2}, ..., MK_{1,1,w_{1,1}}\right\}, \left\{MK_{1,2,1}, MK_{1,2,2}, ..., MK_{1,2,w_{1,2}}\right\}, \right.\right.$$
$$..., \left.\left\{MK_{1,w_1,1}, MK_{1,w_1,2}, ..., MK_{1,w_1,w_{1,w_1}}\right\}\right\},$$
$$\left\{\left\{MK_{2,1,1}, MK_{2,1,2}, ..., MK_{2,1,w_{2,1}}\right\}, \left\{MK_{2,2,1}, MK_{2,2,2}, ..., MK_{2,2,w_{2,2}}\right\}, \right.$$
$$..., \left.\left\{MK_{2,w_2,1}, MK_{2,w_2,2}, ..., MK_{2,w_2,w_{2,w_2}}\right\}\right\},$$
$$..., \left\{\left\{MK_{w,1,1}, MK_{w,1,2}, ..., MK_{w,1,w_{w,1}}\right\}, \left\{MK_{w,2,1}, MK_{w,2,2}, ..., MK_{w,2,w_{w,2}}\right\}, \right.$$
$$..., \left.\left.\left\{MK_{w,w_w,1}, MK_{w,w_w,2}, ..., MK_{w,w_w,w_{w,w_w}}\right\}\right\}\right\}.$$

An integral part of the application of any comprehensive information security system is its expertise. Accordingly, a software application for the method of identification of the functional profile of protection of the decision support system during the examinations of the CSIS was developed.

The functionality of the decision support system meets the requirements of the Law of Ukraine "On Information" and the Law of Ukraine "On Information Protection in Information and Telecommunication Systems".

The software application has functionality (or the ability to improve the program to achieve functionality in the future) for the possibility of software implementation of all modules of the decision support program during state expertise CSIS.

Conclusion. That's it, the proposed model of parameters, which due to the theorist-multiple representation of certain sets of criteria for the security of information, their elements and corresponding levels, allowed in formal form to form the necessary set of values for the implementation of the process of identification of FPP in the CS. Next, it is necessary to develop a method of identification of FPP, which will automate the process of determining the requirements for security functions (security services) and guarantees.

Definition energy function in self-organization processes by hebb's neurons networks in the case of multidimensional data

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The ramped-up development of high-performance computing capabilities of rocks is many variants of computational architectures and technologies, the example of which are supercomputers such as Tianhe-2, Titan – Cray XK7, Sequoia – Blue Gene/Q, K Computer, Mira – Blue Gene/Q and others. Most of these computers are combined by a massively parallel architecture that is built from a set of processors connected to a single computing network. Starting and exploring such networks requires new structures to manage and protect the processing of information. Artificial neural networks are used for these purposes. The main advantage of high-performance computing systems is the ability to combine resources to solve resource-rich computational tasks that should be performed irregularly. At the same time, there is a contradiction between the desire to get maximum productivity and the need to ensure information security. The architecture of information security in grid services ensures the implementation of a wide range of security tasks – from cases in which the protection requirements are minimal or not at all, to tasks with high levels of requirements for privacy, integrity and accessibility.

Grid services combine different administrative domains, each of which has a personal autonomous security mechanism.

If we are talking about the processing of multidimensional data, then it is necessary to organize neurons in a certain way. This arrangement is that data from multidimensional space is projected into two or at least three dimensional spaces, while maintaining the basic properties of the distribution in a multidimensional space.

Let's accept that we have n vectors in N - dimensional space X_i. According to them, n vectors in the M measured space are defined, which are denoted as $(M = 2,3)$. Let the distances between them in N -dimensional space are described as $d_{ij}^* = d(X_i, X_j)$, in M space - measured $d_{ij} = d(y_i, y_j)$.

A nonlinear transformation is to match vectors to minimize the error function described by the ratio:

$$E = (1/C)\sum_{i<j}^{n}([d_{ij}^* - d_{ij}]^2)/d_{ij}^*,$$

where $C = \sum_{i<j}^{n} d_{ij}^*$, $d_{ij} = \sqrt{\sum_{K=1}^{M}[y_{iK} - y_{jK}]^2}$, where y_{ij} means j component of the vector y_i.

When interdependence between signals is used to implement self-organization processes, such self-organization processes are called correlation or Heb's. This type of network includes two types of networks:

– a network that decomposes the data of the main components, or a network of the RSA type;

– a network that decomposes an adaptation system to independent components, or an ICA network.

These two networks are by nature linear networks. The basic Hebb rule is related to the linear model of the neuron described by the ratio:

$$y_j = \sum_{i=0}^{N} w_{ji} x_i.$$

According to Hebb's postulates, a change in the weight of a neuron, after presenting a vector X , is described in the following expression:

$$\Delta w_{jK} = \eta\,(y_i - y_i^{(0)})(x_K - x_K^{(0)}),$$

where $y_i^{(0)}$ and $x_K^{(0)}$ - certain constant, η - training coefficient.

Taking into account, the change in the weight of the network in time can be presented as the following ratio:

$$\frac{dw_{jk}}{dt} = \sum_{i=1}^{N} w_{ji} C_{ik} + \frac{K_2}{N} \sum_{i=1}^{N} w_{ji} + K_1,$$

where K_1 and K_2 - certain constant, related to $x_K^{(0)}, y_j^{(0)}$ and η, C_{iK} - average activity covariation i and k neurons, which is described by the following ratio:

$$C_{iK} = (1/P)\sum_{j=1}^{P}(x_i^{(j)} - x_i)(x_k^{(j)} - x_k),$$

where constant x_i means the average value of the input references, which corresponds to the i component of the average vector $\bar{X}$, where $\bar{X} = (1/P)\sum_{K=1}^{P} x^{(K)}$.

If the change in weight is carried out in accordance with the rule of the largest descent of the energy function E, we get:

$$\frac{dE}{dw_{jk}} = -\frac{dw_{jk}}{dt} = -\sum_{i=1}^{N} w_{ji} C_{ik} - K_1 - (K_2 / N)\sum_{i=1}^{N} w_{ji}.$$

When solving this differential equation, we obtain an energy function in the form of:

$$E = E_v + E_K,$$

where

$$E_v = (-1/2)\sum_{i=1}^{N}\sum_{K=1}^{N} w_{ji} C_{ik} w_{kj},$$

$$E_K = -K_1 \sum_{i=1}^{N} w_{ji} - (K_2 / 2N)\left(\sum_{i=1}^{N} w_{ji}\right)^2.$$

The first component of the energy component E_v determines a variation σ_j^2 in the activity of j neuron. The second component can be identified from the component of the fine energy function.

Conclusion. Thus, energy function in self-organization processes by hebb's neurons networks in the case of multidimensional data are defined.

Analysis of self-taught model of dependence of safety factors using model of semantic transformations .

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