ABSTRACTS

Dovhyy S. O., Lebid' O. H., Kopiyka O. V., Koval'chuk Ju. P., Roiko O. O. Protected user access of the information-analytical system of budget process support // Наукові записки Українського науково-дослідного інституту зв'язку (Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 5-14.

The article describes the subsystems of information-analytical system of budget process support: "Monitoring and analysis of the process of budget preparation and execution," "Data warehouse" and "Primary database" and variations of the formation of the security system architecture for protected user access. The security system architecture provides the necessary level of IT assets protection by describing the approaches to the organization and development of requirements for personnel, processes and technology. The challenge of IT security is to protect valuable information and make it available to authorized users.

***Keywords*:** monitoring and analysis of the process of budget preparation and execution, data storage, primary database, security system architecture, protection and management of digital data

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Polonevych A. P. Improving the quality indicators of phase locked frequency // Наукові записки Українського науково-дослідного інституту зв'язку (Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 15-22.

We solved the problem of scientific synthesis of the phase locked frequency, which improves the efficiency of synchronization network and the probability of transfered information. Main attention is paid to methods of improving quality indicators of phase locked loop performed. The synthesis of open-circuited communication by asking the combined system phase locked loop action under the terms of improving its accuracy and dynamic performance. Substantiates the opportunity to improve the accuracy and dynamic performance of the system phase locked loop which can be achieved through the introduction of a system of differential connection by which indirect measurement is carried out, defining and disturbing influences. The problem is solved of improving quality indicators (performance) of transients, caused by changing not only specifying, but disturbing actions by differential connection. Modeling on the computer confirmed the likelihood obtained in the theoretical results and showed the possibility of a significant increase in dynamic performance and accuracy by introducing of open communication with asking of compensation actions and by differential connection.

***Keywords*:** phase locked loop, synchronization network, the dynamic accuracy, performance, error, the mathematical model

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Bondarenko V. Ye. Optimization of the survivability of telecommunications networks // Наукові записки Українського науково-дослідного інституту зв'язку (Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 23-28.

The paper proposes a new method of synthesis of survivable telecommunications network consisting of radially-hierarchical and ring components. The method takes into account the cost of equipment to ensure survivability. The proposed method is based on two models, which are put into the framework of non-linear Boolean programming. The first model is used to build of survivable radial-hierarchical components of the telecommunications network. If the all radial-hierarchical components are built, then starts the second model, based on which to build the ring components of the telecommunications network. On the basis of particular criteria of survivability for all radial-hierarchical and ring components is determined the criterion of full survivability of projected network. The models have two criteria – maximize survivability (subjective probability of the

network functioning at the destructive influences) and minimizing the cost of network equipment. To simplify the implementation of the models, these two criteria are combined into one. The evaluation of the relationship between cost and survivability of the projected telecommunications network is presented.

Keywords: survivability, modeling, telecommunications networks, nonlinear Boolean programming.

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Maksymov V. V., Panasyuk M. S. Calculation of the control information in OLSR protocol // Наукові записки Українського науково-дослідного інституту зв'язку (Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 29-37.

This article presents two fundamentally different methods of calculating the amount of the control information transmitted in the ad hoc network for OLSR protocol, namely the method of calculating the amount of the control information of delivered packets and method of calculating the amount of the control information of transmitted packets. The first method is based on the idea that the total number of the control information is the sum of all delivered packets for each node in the network, while the second method - the sum of all packets in bytes transmitted by each node in the network. To assess the adequacy of each method was used a software package NS-2, which can help to carry out a simulation of the test network. For the first method of calculating the relative error is 34%. Because the analyzer of Trace files available only for the calculation of transmitted packets. At the same time for the second method was found that calculation relative error is 4%. The difference is primarily due to the peculiarities of NS-2, which uses a slightly modified headers, and adds its own control title Common-header.

Keywords: ad hoc network, OLSR protocol, MultiPoint Relay, service information amount, modeling, NS-2.

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Hrebin' A. P., Levenets' N. F., Shvaichenko V. B., Probytyy D. M. Features for restoring and recovering audiosignals due to the specifics of a magnetic recording // Наукові записки Українського науково-дослідного інституту зв'язку (Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 38-43.

The article discusses main magnetic types of carriers analog soundtrack. Grouped basic elements tract, making a significant distortion in sound processing.The characteristic features of magnetic recording-play devices that define quality is proposed. The values of the parameters on the magnetic recording are obtained. Posted in tabular description of the devices on a magnetic recording medium.Made compilation features of noise and interference in phonograms inherent magnetic records that are crucial for quality audio signals in the process of recovery and restoration. Ranked by eliminating the criterion of the complexity of the characteristics of the analog tracks on the tape. Joined directions for further research on improving the restoration and recovery of audio signals recorded in the digital multimedia formats. It is proposed along with an informative criterion to take into account the recovery of audio features that define the quality of the sound.

Keywords: impulse noise, distortion, magnetic recording, restoration and recovery of audiosignals, phonogram, noise of magnetic recording

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Masyk I. P.   Features of decision-making by skipper in the ship leading in conditions of intensive ship traffic // Наукові записки Українського науково-дослідного інституту зв'язку (Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 44-49.

Analysis of possible risks in the ship leading in conditions of intensive ship traffic is determined. Extreme situations, especially sailing in intensive ship traffic, can develop in an unexpected way, unpredictable course of events and any stereotype actions may be unacceptable.

Research of sea accidents, which are normative and usually allow us to study the psychological mechanisms of navigational errors are carried out constantly in order to reduce the accident rate on board ships. Model, which identifies nine main stages of decision-making by the skipper in a difficult navigation conditions is developed. Procedure for the analysis of decision-making by the skipper is determined and the scheme of the decision-making is developed on the basis of the developed model. Internal and external factors influencing the skipper's decision-making are determined. Quantitative estimates of the effect of external factors on the skipper's decision are set according to the results of practical research.

*Keywords***:** navigation conditions, intensive ship traffic, safety of navigation, making decisions

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Korpan' Ya. V.   Using binary codes based Walsh sequences to increase the noise immunity of digital communication systems // Наукові записки Українського науково-дослідного інституту зв'язку **(Scientific proceeding of Ukrainian research institute of communication).   – 2015. – №2(36). – P. 50-54**.

The paper deals with the evaluation of noise immunity of digital communication systems using binary codes on the basis of Walsh sequences. It was confirmed that the binary codes based Walsh sequences can realize digital algorithms of coherent demodulation and soft decoding error correcting performance. That is, to get the optimum processing a Walsh sequencewith a small base and ensure high noise immunity of transmission of discrete messages.

*Keywords***:** digital communication язь, evaluation of noise immunity , Walsh sequence, Walsh sequence, coherent demodulation, soft decoding

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Zinchenko O. V. Improving iteration of the phase-locked by improving the performance of the main circuit // Наукові записки Українського науково-дослідного інституту зв'язку **(Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 55-60**.

Iterative phase-locked system is generally based on the design requirements of the specific quality indicators. In many cases necessary to increase accuracy and improve dynamic transients of phase-locked system achieved through corrective devices. Good results gives an introduction to the phase-locked-circuited compensation differential channels and relationships, synthesized with varying conditions invariance error regarding asking or disturbing influences. The effect of corrective devices and channels circuited compensation equivalent differential constraints on parameters of a system depends on the level limit signal nonlinear elements of the system. The best results for the task of raising quality indicators iteration of the phase locked gives optimum control. Thanks to the control unit located in an open circuit the primary channel management, increased performance throughout the iterative system by increasing the speed of the main circuit. This control unit does not affect the stability of the main circuit and the entire iteration of the phase locked.

Keywords: iterative phase-locked system, PLS, iterative system, compensation differential channel, phase error, primary channel management

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Nekryach O. V. The analysis of event interdependencies in complex dynamic systems // Наукові записки Українського науково-дослідного інституту зв'язку **(Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 61-65**.

Modern networks are complex structures with a large number of elements. Due to relationship between elements, changing state of one of them leads to other changes in the state of controlled

objects. In the real world these relationships are complex and not always obvious. Management system should contain a tool that will automatically detect dependencies between controlled parameters.

The system dependencies detection between the parameters should be a part of the root cause analysis system. This paper present the structure of the system based on the requirements for the process of finding the causes of the incident. Such a system is necessary for proper management of complex dynamic structure which is a modern data networks are.

The algorithm of automatic relationship detection between controlled parameters based on pairwise calculation of mutual information between data sets. Based on the results of calculations system can make decision is there a correlation between pair of parameters. This information may subsequently be used by automated control system for automatic an alysis of the incident root causes.

Keywords: data network, complex system, dynamic structure, event interdependencies, controlled parameters, mutual information, root cause

Kosyuk Ye. S. Use of neuron network with direct signal distributing in the tasks of detection scripted malicious software // Наукові записки Українського науково-дослідного інституту зв'язку **(Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 66-71.**

The work is dedicated to improve the efficiency of information protection, analysis of existing solutions to protect your computer against script viruses, research methods and algorithms for recognition scripting malware. The methods and means of recognition scripting software. The approach and developed a method of optimizing the structure of bilayer perceptron intended to recognize the script malware. The work is estimated expressions that allow volumes based on the training set and input parameters to determine the optimal number of synaptic connections and optimal number of hidden neurons. The model of a neural network designed for use in virus scanner to detect viruses written in script programming language Microsoft Visual Basic. Numerical experiments confirmed the effectiveness of detection of malicious scripting software using bilayer perceptron whose structure was designed using the proposed technique. The main recommendations for further developments in this area are in developing methods for optimizing the structure of synaptic connections in the bilayer perceptron optimum number of hidden neurons. Reasonably possible areas of use.

Keywords: neuron network, script virus, information protection, mutilayer perceptron

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Hol' I. V. Approach to the integrated assessment of economic and financial stability of the enterprise telecommunications // Наукові записки Українського науково-дослідного інституту зв'язку **(Scientific proceeding of Ukrainian research institute of communication). – 2015. – №2(36). – P. 72-76.**

We consider the evaluation of the economic sustainability of the enterprise by means of coverage faktoroobrazuyuschih elements of the production system. Organized by choosing a set of indicators in determining the overall stability of the complex. The proposed method has been used in different branches of the national economy makes available to evaluate and track the dynamics of economic stability that makes it possible to develop a more effective strategy for the company.

Keywords: sustainability, economic sustainability, economic sustainability performance assessment