CONTENTS AND ABSTRACTS

DATA TRANSMISSION AND PROCESSING

V.A.	Goncharov	V.N.	Przhegorlinsky.	NETWORK	ATTACK	DETECTION	BASED	ON	NETWORK
HOS	TS INTERC	ONN	ECTION CLUST	ER ANALYS	IS				

Key words: computer attack, vector cluster analysis, malware detection.

The problem of malware detection and identification inside computer system getting and sending sensitive data on behalf of intruder command as the result of successful attack over network is considered. Malware detection methodology based on cluster analysis of computer

S.N. Buzykanov. MODIFIED ALGORIYHM TO CALCULATE SIGNAL SPECTRUM IN WEIGHTED **SOBOLEV SPACE**

Key words: spectral signal processing, weighted Sobolev space W_2^1 , digital signal processing.

The interconnection between analog and discrete signal spectrum in the weighted Sobolev space W_2^1 is shown. The expression of optimal weighted coefficient α was defined and discrete signal spectral processing using this coefficient was analyzed. The offered algorithm allows to reduce by half sampling frequency of signal and its derivation relative to V.A. Kotelnikov

V.N. Garmash. MARKOVIAN SEGMENTATION OF RADAR IMAGES USING APRIORISTIC INFORMATION OF DIGITAL DISTRICT MAPS

Key words: radar image, digital district map, Markovian filtering, texture segmentation, delineation.

An algorithm of Markovian segmentation of radar images of a terrestrial surface with usage of aprioristic information about the district received from a shot of a digital map combined with a radar portrait in identical coordinates and scale is offered. Experimental research of the algorithm and its comparison with gradient methods are conducted. Usage expediency of the

N.I. Myasin, I.A. Saitov, R.B. Tregubov. PROBLEM OF RAMAN'S AMPLIFIERS APPLICATION IN HIGH SPEED FIBER OPTICAL TRANSMISSION SYSTEMS

Key words: fiber optical transmission system, wavelength multiplexing division, fiber optical amplifier, stimulated combination scattering, optical discharge, fiber flow.

Main problem of Raman's amplifiers application for construction of high speed fiber optical transmission system with wavelength multiplexing division is considered in the article. Analysis of disadvantages of erbium dopped fiber amplifires, characteristics of Raman's amplifiers are

RADIOTECHNICAL AND MEASURING SYSTEMS

S.N. Kirillov, P.S. Pokrovsky. PROGRAM-CONTROLLED QUADRATURE SHAPER OF SPECTRAL EFFICIENT RADIO SIGNAL BASED ON DEPENDENT IMPULSE SEQUENCES

Key words: digital modulation, QAM, OQPSK, FQPSK, GMSK.

A scheme of program-controlled quadrature radio signal shaper capable to implement spectral efficient modulation schemes (such as T-OQPSK, FBPSK, FQPSK, and GMSK) with phase

unbalance less than 5 deg. and amplitude unbalance less than 0.5 dB is offered. A possibility to organize cross-correlation between in-phase and quadrature components based on dependent impulse sequences for modulation changing is exhibited. Shaper structure offered is able to obtain new unknown digital modulation kinds with multiple interrelation between in-phase and
quadrature components24
V.G. Andreyev, V.A. Belokurov. METHOD OF STRAPDOWN NAVIGATING SYSTEMS COARSE ALIGNMENT ACCURACY INCREASE
<u>Key words:</u> vector decorrelation filter, joint processing of signals, coarse alignment, strapdown navigating system, system of Jula-Uolkera equations.
A problem of strapdown inertial MEMS navigating system coarse alignment accuracy increase at case vibrations of its carrier is considered. Usage of vector decorrelation filter for simultaneous processing of signals from accelerometers exits is offered. Application of vector filter of a small order p=3 7 is shown to give the possibility to reduce a dispersion of an error coarse alignment 1,2 1,6 times in comparison with the results of separate filtration of signals from separate accelerometers exits. The advantage is reached at the expense of mutual signals correlation account from various accelerometers exits at vector decorrelation filter synthesis28
${\it I.S.~Kholopov}.~{\tt DETECTION~OF~SIGNALS~IN~RADAR~SYSTEMS~WITH~THE~ADAPTIVE~CHAOTIC~PULSE~CLUTTERS~RECOGNITION~ALGORITHM$
<u>Key words</u> : chaotic pulse clutters, clutter recognition algorithm, Neyman-Pearson criteria, probability of false alarm, probability of correct detection, signal to noise ratio.
An adaptive algorithm for chaotic pulse clutters recognition is developed. The analysis of pulse signals detection effectiveness in pulse clutters is made. It is shown that the recognition of pulse clutters can reduce signal to noise threshold ratio to 34 dB at correct recognition and fixed false alarm probability not less than 0,7
COMPUTER SCIENCE AND APPLIED MATHEMATICS
A.V. Prutzkov, A.N. Pylkin. INFORMATION SYSTEM FOR SOLUTION SEARCH OF GENERATION AND RECOGNITION TASKS IN WORDFORM SPACE
V as seed a natural language managering manufal spical countries and analysis around the countries.
Key words: natural language processing, morphological synthesis and analysis, graph theory.
The solution of generation and recognition tasks in wordform space is offered. Terminology correspondence between graph theory and offered wordfrom generation and recognition method is given. Algorithms of wordfrom generation and recognition method are shown to be reduced to search in deep algorithm. Presentation of these tasks solution in wordform space shows that offered algorithms always find generation and recognition tasks solution
The solution of generation and recognition tasks in wordform space is offered. Terminology correspondence between graph theory and offered wordfrom generation and recognition method is given. Algorithms of wordfrom generation and recognition method are shown to be reduced to search in deep algorithm. Presentation of these tasks solution in wordform space shows that
The solution of generation and recognition tasks in wordform space is offered. Terminology correspondence between graph theory and offered wordfrom generation and recognition method is given. Algorithms of wordfrom generation and recognition method are shown to be reduced to search in deep algorithm. Presentation of these tasks solution in wordform space shows that offered algorithms always find generation and recognition tasks solution
The solution of generation and recognition tasks in wordform space is offered. Terminology correspondence between graph theory and offered wordfrom generation and recognition method is given. Algorithms of wordfrom generation and recognition method are shown to be reduced to search in deep algorithm. Presentation of these tasks solution in wordform space shows that offered algorithms always find generation and recognition tasks solution
The solution of generation and recognition tasks in wordform space is offered. Terminology correspondence between graph theory and offered wordfrom generation and recognition method is given. Algorithms of wordfrom generation and recognition method are shown to be reduced to search in deep algorithm. Presentation of these tasks solution in wordform space shows that offered algorithms always find generation and recognition tasks solution
The solution of generation and recognition tasks in wordform space is offered. Terminology correspondence between graph theory and offered wordfrom generation and recognition method is given. Algorithms of wordfrom generation and recognition method are shown to be reduced to search in deep algorithm. Presentation of these tasks solution in wordform space shows that offered algorithms always find generation and recognition tasks solution
The solution of generation and recognition tasks in wordform space is offered. Terminology correspondence between graph theory and offered wordfrom generation and recognition method is given. Algorithms of wordfrom generation and recognition method are shown to be reduced to search in deep algorithm. Presentation of these tasks solution in wordform space shows that offered algorithms always find generation and recognition tasks solution

D.V. Suvorov, S.A. Baturkin. ARCHITECTURE OF SYSTEMS OF REMOTE ACCESS TO EDUCATIONAL LABWARE ON THE BASIS OF SQORM STANDARD
<u>Key words:</u> remote access, educational, SQORM, architecture, scaled, remote, laboratory. In the article exchange standard by SQORM educational content is considered, examples of
basic types of existing architecture of remote access systems in educational labware of various type using SQORM standard are resulted, a scheme of a typical architecture decision for creation of remote educational laboratories on the basis of the standard is offered
ELECTRONICS
V.A. Korotchenko, V.I. Solovyev, Zh.V. Solotenkova. DYNAMICS OF MAGNETICALLY OPERATED CONTACTS DISCONNECTION AT ELECTRIC CURRENT OPENING
<u>Key worlds:</u> disconnection of magnetically operated contacts, electric attraction, autoelectronic emission, movement of contact parts.
A computer model of magnetically operated contacts disconnection at electric current opening has been developed. By the example of magnetically operated sealed switch MKA-14103 time dependence of grid points of contact part, power of electric attraction of contacts, power of voltage, power of autoelectronic current and energy released at a positive electrode specified by the current have been received. It was proved that electric power at small values (till 0,1 micrometer) of interstice and voltage at 200 volt generates the iterative run of contacts closing for about 100 microseconds, and that the energy specified by autoelectronic current can be one of the reasons for contacts erosion. Formation of iterative runs has been experimentally found
M.V. Dubkov, B.I. Kolotilin, A.V. Nikolaev. INVESTIGATION OF NONLINEAR DISTORTION OF ELECTRIC FIELD INFLUENCE IN THE ANALYZER OF QUADRUPOLE MASS FILTER ON THE CONDITIONS OF CHARGED PARTICLES GRADING
Key words: non-linear_distortions, quadrupole mass filter, hyperpoloid mass spectrometers
Features of electrodes shape changes of quadrupole mass filter analyzer in the presence of nonlinear distortions described by different coefficients of electric potential expansion in power series are analysed. The influence of nonlinear distortions on mass peak shape is shown
O.N. Kryutchenko, A.V. Molchanov, D.A. Morozov, M.V. Chirkin. BILATERAL DISCHARGE IGNITION IN A RING LASER
Key words: ring laser, ionizing wave, cold cathode, gas breakdown, time delay. Gas breakdown in bilateral discharge channels in a ring helium-neon laser is experimentally investigated. An additional electrode electric field effect on statistics of discharge ignition is determined. Solitary ionizing waves propagating along both discharge legs in consecutive order have been registered. Power supply requirements providing minimum gas breakdown destructive influence on cold cathode are defined.
V.G. Litvinov, O.A. Milovanova, N.B. Rybin. CHARGE CARRIERS CONCENTRATION DETERMINATION IN LIGHTLY DOPED TYPE-II QW STRUCTURES
Key words: charge carriers concentration, heterostructure, quantum well.
A method for determining the concentration of charge carriers accumulated in a rectangular

MANAGEMENT

I.V. Brindikova, V.S. Gurov, V.P. Koryachko, A.I. Taganov, S.V. Chernyshev. EDUCATION QUALITY MANAGEMENT INNOVATIONS IN THE CONTEXT OF INFORMATION PROBLEMS Key words: education quality management, information problems, information management
principles. The paper discusses scientific and methodological questions that reflect innovation and general principles of education quality management system that must be considered during the conceptual design of information systems
M.Yu. Novikova. APPLICATION OF CHANGES THEORY PRINCIPLES IN MANAGEMENT OF ENTERPRISE DEVELOPING SPECIAL PURPOSE EQUIPMENT
<u>Key words</u> : organizational changes, developing organization, special purpose equipment, equipment generation, research and development, financial stability, forecasting.
In the article justification of changes theory principles usage necessity at developing enterprises as method of strategic competitive advantages provision is elaborated. A question of determination of changes start optimum moment from financial side and in the conditions of transition to new equpment generation as one of the most difficult stages of life cycle of developing organization is considered. Besides in this work the technique of practical realization of changes at the enterprise producing special purpose equipment is offered and possible benefits from application of toolkit of changes theory taking into account features of enterprises of a given industry are characterized
I.S. Potapova. INVESTIGATION OF CONTROLLED MATHEMATICAL MODEL OF MULTISECTOR ECONOMY WITH SET CONSUMPTION LEVEL
<u>Key words</u> : controllability, multisector economy model, consumption level, linear system of differential equations.
Controlled mathematical model of multisector economy with constant consumption level and control depending on state is analysed. Necessary and sufficient conditions of total mathematical model controllability are found.
BRIEF REPORTS
A.I. Baranchikov, A.Y Gromov. RELATIONAL DATABASE WITH VARIOUS CONFIDENTIALITY MARKS ATTRIBUTES AND MULTIVALUED DEPENDENCES SCHEME DECOMPOSITION ALGORITHM
Key words: relational, multivalued dependency, confidentiality, decomposition, attribute.
Decomposition based algorithm for constructing schemes of relational databases based on multivalued and functional dependencies taking into consideration privacy attributes of different levels is proposed. Time complexity and algorithm convergence assessment is provided95
A.I. Novikov. ON SUMMATION OF MULTINOMIALS AND METHOD OF UNCERTAIN FACTORS
Key words: summation of multinomials, direct methods of summation.
Examples of real problems in which there is a necessity of finding sums of multinomials of natural argument with integer factors are considered. Historical aspects of problem solution are discussed. Constructive algorithms of conclusion of final formulas for sums of multinomials are given
I.A. Lvova. RESEARCH OF RESONANT SYSTEMS PARAMETERS FOR MICROWAVE MEASURING CONVERTERS

Key words: dielectric resonator, resonant system, tuning range.

Research of parameters resonant systems on the basis of disk-type and ring-type dielectric resonators with a dielectric disk tuning element is presented. Dependences of a tuning range of H ₀₁ modes on geometrical sizes of resonant system elements are received	102
E.A. Leontyev, L.A. Seryapina, A.S. Leontyev. COMPLEX DIAGNOSTICS OF EARLY GLAUCOMA	
<u>Key words:</u> method and equipment for early glaucoma diagnostics, rank correlation, linear model of diagnostics object, diagnostic efficiency, mass preventive examinations.	
Method and equipment of early glaucoma diagnostics are offered. Research of 17 glaucoma indicators influence on disease development on the early stages is defined, linear model of diagnostics object is elaborated, diagnostic indicator values are calculated. Diagnostic efficiency increase is proved, expediency of integrated diagnostics used for early treatment and glaucoma process prognostication is verified.	105
I.V. Rudakov. DECOMPOSITION OF A COMPLEX DISCRETE DEVICE FORMAL MODEL	
Key words: complex technical systems, discrete devices, decomposition, logic network.	
In a given article a complex technical (microprocessor and robotics, control) systems decomposition method that allows to break the studied diagram in parts by checking the correct functioning as a single functional unit, and the whole complex device as a whole	108
A.A. Kiriyakov. CARDIOVASCULAR SYSTEM DIAGNOSTIC SIGNAL PRIMARY PROCESSI ALGORITHM	NG
Key words: driftage izolines, pletismogram, block of driftage izoline eliminating, filtering.	
A task of driftage izoline eliminating is presented. It is shown that the usage of block of driftage izoline eliminating at sample (5 120 seconds) allows to get stable average forming signal pletismogram with difference not exceeding 1,5%	111
INFORMATION ABOUT THE AUTHORS (Russian)	114
INFORMATION ABOUT THE AUTHORS (English)	116