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GRAPH THEORY METHODS APPLICATION TO STUDYING T-SYNCHRONIZATION OF CHAOTIC SYSTEMS 2

Makarenko A.V.

Developed is the approach to chaotic systems T-synchronization analysis, based on previously proposed by the author novel method of discrete mappings and sequences symbolic CTQ-analysis, on the basis of finite alphabet of symbols encoding three successive samples in the state space. As a further development of the approach considered is the time structure graph of chaotic systems' synchronization, its main features are studied. Basic capabilities of this approach are demonstrated by the example of coupled identical logistic maps. Revealed is the sensitivity of mentioned graph structural characteristics to system attractors rebuilding when establishing various synchronization modes of chaotic oscillations.

Keywords: synchronization, symbolic analysis, intermittency, graph of time structure of synchronization, multidimensional time series, logistic map.

ROBUST CONTROL OF NONLINEAR OBJECTS WITH THE DISTRIBUTED DELAY SINGLE CLASS 16

Tsykunov A.M.

Supposed is that mathematical model parameters are unknown and only output variables can be measured. Taken as a target criterion is a reference signal tracking accuracy. Obtained are control algorithms allowing to compensate the prior uncertainty and to diminish substantially the influence of unmeasured external limited disturbance on output variables. Given are the numerical example and modeling results, demonstrating the efficiency of the tracking algorithm obtained.

Keywords: the distributed delay, robust control, target condition, functional, the reference signal.

COMBINED ADAPTIVE CONTROL SYSTEM FOR STRUCTURALLY AND PARAMETRICALLY UNCERTAIN NONLINEAR PLANT 23

Eremin E.L., Shelenok E.A.

Considered is the problem of combined adaptive control system constructing for structurally and parametrically uncertain nonlinear dynamic periodic action plant with inaccessible for measurement state variables. Popov hyperstability criterion is applied to the problem solution, with control systems L -dissipativity conditions taken into account.

Keywords: periodic mode, adaptive control, combined regulator, nonlinear dynamic object, priory uncertainty, hyperstability criterion, L -dissipativity.

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Keywords: composite indicator, synthetic category, estimation model, positioning map, hierarchical structure, functional network.

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Suggested is the company investment activity simulation model, based on which the behavior of the company fundamental value at various control parameters is investigated. Considered is the mutual effect of bank and corporate borrower cost growth factors. Based on obtained patterns a set of decision rules is formulated, subordinating bank's decisions on expediency of financial resources placement among corpo-

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Keywords: credit interaction, simulation model, banking solution, «image» value, decision rules.

PROBLEMS OF PROGRAMMABILITY, SECURITY AND RELIABILITY OF DISTRIBUTED COMPUTING AND NETWORK-CENTRIC CONTROL.

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Zatuliveter Yu.S., Fishchenko E.A.

Analyzed are the system-wide problems arising from heterogeneity and global strong connectivity of computer networks. Shown is the effect of heterogeneous network resources functional integration problems combinatorial complexity on creating large systems of distributed computing and network-centric control. Highlighted are computer aspects of sustainable development of social systems in conditions of global information strong connectivity. Considered are common aspects of IT security problems: technical (cybersecurity), social (influence of information superflows) and personal (for example, the phenomenon of «digital dementia»). Matched are the key directions of improving computer environments, including the provision of reliable computing in computer environments with unreliable components.

Keywords: global network, heterogeneity, strong connectivity, heterogeneity, combinatorial complexity, integration, distributed computing, network-centric control, social system, sustainable development, mathematically unified algorithmic space, seamless programming, cybersecurity, reliable computing, digital dementia.

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Mayer R.V.

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Keywords: didactics, didactic system, simulation modeling, cybernetics, theory of teaching, management, learning knowledge, learning activity.

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Podlazov V.S.

A system area supercomputer network with increased number of nodes and diverse intermodal paths is considered, given the name of generalized extended multiring. The characteristics of such network in comparison to «flattened butterfly» network with the same nodes size and equal network diameter are given.

Keywords: system-area network, multiring, flattened butterfly, generalized hypercube, switching features, size of nodes, number of consumers (processors), network diameter.

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Keywords: detection of a mobile object; system of heterogeneous observers; optimal evasion control law.

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