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СОДЕРЖАНИЕ

CONTENTS & ABSTRACTS

The cognitive approach in simulation and control is briefly overviewed. A class of control problems is identified where the application of cognitive simulation is justified. Basic definitions are made. A method for developing the strategies of weakly structured problem solution based on cognitive models as applied to socio-economic system is presented. Some cognitive approach development lines are shown.

A computerized system for estimating citizens' satisfaction with regional administration is presented. The system includes the following models: individual's behavior, threshold aggregation, indices interaction, factor analysis, and disproportional development. The system allows to reveal the citizens' satisfaction with the regional administration based on the set of life quality parameters without using any regular public opinion polls.

An economic growth model modifying the Solow model is proposed. The modified model considers the natural capital and the generalized savings rate including the expenditure for natural capital reproduction. The generalized savings rate value optimal with respect to the criterion of average consumption per capita is derived as well as the savings rate for capital assets development.

A method for analyzing the balanced structure of production cycle's control parameters on the basis of cost estimate schemes in a multi-resource self-developing system model is proposed. The paper notes that, in the long term, the balanced control meets the optimality criterion for the resource reproduction factor in a multi-product manufacturing system and brings the system to the equilibrium state. The method proposed can be included into an index-based planning toolkit for large-scale economical objects from a holding up to the national economy.

A predictive model enabling the analysis of alternative national strategies for minimizing external environmental uncertainty factor is developed.

An approach to building an environmental event identification module for operative decision-making support is proposed. A methodology for building a representative sample necessary for the module development is described.

Design concepts of process control systems tolerant to operating staff's errors are formulated. A control scheme is proposed based on an enhanced event model of automated manufacture including «process network» and «processes» models and active process scenarios. The latter combined with event models enable new opportunities for process control automation, such as process operation procedure management, automated personnel activities management and supervision, in-situ coordination of services and works, control levels differentiation through personalization of interfaces.

An approach to complex process quality management is described. The entropy is offered for evaluating the technology status and product quality described by the measured values of process variables and quality specifications and for the quality indices described by stochastic variables, while the amount of information can be used for identifying the relationship between the technology and the quality. Two technologies are considered: the local one is related with the product unit, while the global one restrains its definitional domain. A self-learning quality control system is developed.

The paper reviews speech recognition and synthesis technologies and their applications in queuing systems as well web-service technology developed for service-oriented architecture implementation. Next generation architecture for queuing systems with intelligent services is offered.

The methods for polynomial synthesis of multidimensional non-separable multirate systems are considered. Basic requirements to be met by synthesized digital filters are proposed. Three main approaches to the synthesis are proposed. They are based on the application of Bernstein polynomials, lifting technique, and matrix completion method.

The problem of regional markets modeling is examined with the purpose of establishing general rules in regional market trends and building a forecast. An identification algorithm for model parameters and regional market state is proposed taking into account the information about the trajectories of similar («related») markets under changing regional market trends.

A digital indication technique is offered for singular figures arising at the changes of stock market prices development curve represented by the graphs of so-called «Japanese candles». The technique allows to digitize these figures that show with some probability the changes in stock prices.

The paper predicts the need in a new «pragmatic» paradigm of scientific publications and argues for the thesis that the application of science-metering indicator of science effectiveness contradicts the strategy towards competitive innovative Russian economy. Instead, the paper suggests to organize innovation-oriented management in the national segment of domestic science.