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MODAL CONTROL WITH CONTROLLER AUTO-TUNING
IN LINEARIZED TWO-MASS ELECTROMECHANICAL
SYSTEMS

Kozhevnikov A.V., Kochneva T.N., Kochnev N.N.

The article presents a control system mathematical model for linearized two-mass electromechanical system with a modal controller. Quality indicators of transient processes in the control system are analyzed in comparison with characteristics of subordinate regulation structures. Shown is a high efficiency of electric drives with non-rigid mechanics modal control compared to traditional controllers and control methods. Considered are methods of system modal regulator auto-tuning, demonstrating the higher efficiency of the direct pattern search matching method against genetic algorithm of controller auto-tuning.

Keywords: modal control, electromechanical system, controller auto-tuning, genetic algorithm, direct search method.

Geraskin M.I., Chkhartishvili A.G.

The problem of oligopoly market structures simulation is considered for arbitrary number of agents, linear and nonlinear demand functions, nonlinear agents' costs functions. The equilibrium behavior of agents is described on the basis of conjectural variations in Cournot and Stackelberg reaction models (considering cases with one or several leaders). The adequacy of Cournot reaction model was proved by equilibriums simulation for Russia Volga region telecommunication market with statistically obtained prices and agents' costs functions for voice communication and internet traffic.

Keywords: oligopoly, nonlinear demand and costs functions, Nash equilibrium, Cournot reaction models, Stackelberg reaction models, telecommunication market.

AN APPROACH TO THE ASSESSMENT OF HIGHER EDUCATION INSTITUTIONS COMPETITIVENESS 23

Mardanov M.D., Rzaev R.R., Jamalov Z.R., Hasanov V.I.

A method based on fuzzy inference is proposed for assessing the higher education institutions competitiveness and their subsequent ranking. Higher education institution competitiveness assessment includes multi-criteria assessments of its' competitive position in the educational services market and of a marketing environment in the whole. The proposed approach was tested on a set of hypothetical higher education institutions differing by arbitrarily chosen endogenous and exogenous characteristics.

Keywords: competitiveness of the university, marketing space, educational services, fuzzy set, fuzzy conclusion.

CREDIT LEVERAGE OPTIMIZATION MAXIMIZING EXPECTED RATE OF PORTFOLIO VALUE INCREASE...35 Krivosheev O.V.

Considered is a control problem of Markowitz investment portfolio, which is subjected to independent stochastic increments of price logarithm, described by Wiener process with a drift and cash used as the risk free asset. An expression of optimal credit leverage is obtained. Optimal time or a leverage correction threshold is derived under the circumstances of positive transactional costs. Equilibrium asset return and leverage are found under conditions of leveling the equity capital profitability in all markets. The same approach can be adapted to real sector enterprises.

Keywords: CAPM, Wiener process, assets, credit leverage, portfolio, shares, random walks, rate of return.

Korotin V.Y., Ulchenkov A.M., Islamov R.T.

Considered is a debt structure optimization problem to maximize oil company value under oil price uncertainty, based on quantile cri-

teria. Suggested is a guaranteeing (by probability) solution search algorithm, giving a solution that maximizes the company value.

Keywords: quantile optimization, stochastic optimization, uncertainty analysis, risk-management.

Solomatin A.N., Khachaturov V.R.

Considered is a specificity of strategic control as of a final stage of region strategic management process. As particular cases of a general model of dynamic non-stationary system, system models for various ways of management are studied. Techniques of deviations monitoring, environment indignations monitoring, and crisis situations monitoring are suggested, as well as the integrated algorithm of strategy realization monitoring, uniting these techniques for practical application. Dynamic design application to adjustment and adaptation of regional development strategy is considered.

Keywords: strategic management of the region, strategic control, monitoring of strategy realization, adaptation of strategy.

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Sokolov N.L., Zakharov P.A.

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Keywords: autonomous system, control, spacecraft, the knowledge base, the inference engine, identification, contingency, simulation, forecasting, state, onboard equipment, decision-making.

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Budynkov A.N., Masolkin S.I.

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Keywords: classification, SVM, kernel, entropy.

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Keywords: the distributed systems, Internet technologies, network interactions, pipeline processing.

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