CONTENTS & ABSTRACTS

Slavin B.D.

A review is presented of the literature on collective intelligence technologies. Shown is that they differ significantly from crowd sourcing technologies and can be presented as knowledge era sourcing. A description of collective intelligence attributes is suggested that can be used for the design of enterprise knowledge management systems and expert networks. Briefly described are the methods of collective intelligence modeling and measurement. The theory and practice development necessity of collective intelligence technologies is shown.

Keywords: collective intelligence, crowdsourcing, IQ, expert networks, social networks.

Shvedov A.S.

Pointed out is that in classical linear regression model the residuals are assumed to be normally distributed with zero average and standard deviation. However, the real data usually do not satisfy the classical model assumptions. At the same time, even a single outlier can influence significantly on regression parameters estimation. One of the robust regression methods with high breakdown point is the method of least trimmed squares. The new proof of the breakdown point estimation theorem is given, being much more simple that the classic proof.

Keywords: robust regression, least trimmed squares estimator, breakdown point.

Burkov V.N., Korgin N.A., Novikov D.A.

Theoretical problems connected with analysis of integrated control mechanisms for the organizational-technical systems (OTS) are discussed. These systems existing classification extension is offered, arising with transition from separate control mechanisms to integrated ones. A detailed consideration is given of two key problems: the integrated mechanism' efficiency and strategy-proofness assessment and the possibility of its decomposition to assess separate elementary mechanisms.

Keywords: control science, organizational-technical system, systems analysis, strategy-proofness.

Belov M.V.

The model is suggested of the knowledge intensive firm human capital economical management. Shown is that using the basic principles of enterprise managerial accounting significantly increases the practical usability of the model. Human capital cost optimization problem is solved for the concrete exemplar firm. The example demonstrates the tasks of headcount control and employee development under conditions of irregular and uncertain demand of human resources from core business side.

Keywords: human capital management, knowledge intensive firm, employee lifecycle, stochastic model.

Gribanova E.B.

It is noted that the inverse problems arise from the need in finding optimal ways of companies' issues solving, answering the question «how to make this so, that?..» The article suggests options of the economy inverse problems solving using modified method of inverse calculations. Various types of limitations on function arguments are considered. The possibility is shown to apply modified method of inverse calculations for two arguments function optimization on given interval.

Pointed out is that the obtained results could be useful in the systems of managerial decisions making support.

Keywords: inverse computations, inverse problem, restriction, optimization, management decisions.

Spiro A.G., Goldovskaya M.D., Kiseleva N.E., Pokrovskaya I.V.

It is suggested to associate each analyzed time series of exchange-traded asset price (TS-P) with time series of hash codes (TS-HK) that will show the price rising or falling for each element of TS-P. In this case the hash codes are integers, and their sequence allows similar (typical) groups of TS-P highlighting in exchange-traded asset price changing dynamics. Described are the procedures of the original time series conversion and of the corresponding hash codes determination. The basic properties of hash codes sequences are formulated. The methodology of trajectory analysis and the asset exchange rate forecasting is suggested, using segmentation and hashing data.

Keywords: stock market, the procedure of a sliding window, the hash codes, time series segmentation, typical segments, the growth/falling forecasting of stock quotes.

Mikrin E.A., Somov S.K.

The article examines online information backup issues in distributed data processing systems (DDPS) operating within computer networks, in order to improve their operation safety. The features of using three online backup basic strategies in DDPS are analyzed. Problems are formulated of optimal by different criteria DDPS online backup distribution over computing network nodes, and the methods of solving them are proposed. Problems and challenges of data arrays backing up optimization, taking into account the relationship between them, are considered, as well as data backup in distributed databases. Analyzed is the requests traffic impact on DDPS backup distribution.

Keywords: distributed data processing systems, computer networks, backup arrays of data, the optimization problem of the data redundancy, data backup strategy.

Zack Yu.A.

Statement is given and mathematical properties are derived for the problem of constructing acceptable and optimal routing assignments for one or several vehicle types in case of given set of constraints on cargo receiving points and delivery time, and of simultaneous two or more tasks performance impossibility. Based on derived properties of acceptable and optimal sequences, the tasks solution algorithms are developed using modified sequential optimization methods, illustrated by numerical examples. The results of computing experiments are given.

Keywords: sequence of assignments that are valid and optimal routes, estimates of the partial plans, modified sequential optimization algorithms.

Potekhin A.I.

Problems are considered of creating the train dispatching systems, able to predict potential conflict situations. For this purpose a formal method is developed of railway objects (stations, spans) structure representation in the form of a logical functions system, based on which is the number of routes. Logical relations between the routes (compatible, incompatible, conflicting) are determined.

Keywords: logical model, railway station, railroad switch, the trains route, compatible, conflicting routes.