

METHODS OF PATTERN ANALYSIS IN STATICS AND DYNAMICS, PART 1: LITERATURE REVIEW AND CLARIFICATION OF THE TERM

F. Aleskerov, V. Belousova, L. Egorova, B. Mirkin

Annotation

Pattern analysis is a new area in data analysis related with the search for relationships between the objects, the construction of the objects classification and study of object's changes over time. In the first part of the article the notion of 'pattern' is introduced, and a survey of methods of cluster analysis and pattern analysis is presented.

Key words: data patterns, dynamic pattern analysis, cluster analysis.

CROSSLEXICA: A UNIVERSE OF LINKS BETWEEN RUSSIAN WORDS

I. Bolshakov

Annotation

A superlarge Russian computer dictionary is created with a vocabulary of 290,000 elements and as many as 8 million links of all possible types between them. It is highly multidisciplinary and is designed for any audience applying to it with requests in Russian or English. In interactive mode, it facilitates text editing and language learning via linguistic and encyclopedic information. In non-interactive mode, it is accessible for any external software.

Key words: Russian language, computer dictionary, links between words, multidisciplinary, interactive and programmed access, requests in Russian or English.

APPLICATION OF ERGONOMIC SEMIOTICS PRINCIPLES FOR USER INTERFACE DESIGN IN THE POLY CULTURAL CONTEXT

J. Taratukhina, D. Aldunin

Annotation

Nowadays there is an active implementation of information technology in the learning process. This is expressed in e-textbooks and educational environments as well as web sites and Internet communities. Very often such e-resources imply multicultural audience. There are different approaches to creation of ergonomic user interface design in different cultures, though. This particular paper is devoted to analysis of approaches' differentiation and is also aimed at working out a list of recommendations on the ways to improve ergonomic user interface design of electronic learning materials oriented for multicultural audience.

Key words: ergonomic semiotics, ergonomic design, elec-tronic learning materials, multicultural audience.

DISTRIBUTED EVOLUTIONARY NETWORK FOR THE SOLUTION OF MULTI-OBJECTIVE OPTIMIZING PROBLEMS IN SIMULATION SYSTEMS

M. Hivintsev, N. Akopov

Annotation

In the article is presented a novel approach to the solution of multi-objective optimizing problems of large-scale dimension systems realized, in particular, in the simulation systems of the class AnyLogic through distributed calculations. A new concept of creation of the distributed evolutionary network is suggested, based on splitting of space of required variables into clusters and assignments is offered to each computing element of a network of the cluster on which search of intermediate results by means of interacting genetic algorithms is carried out.

Key words: simulation modeling, genetic algorithms, distributed calculations, multi-objective optimization.

WEIGHTED SUM METHOD IN THE ANALYSIS OF MULTICRITERIAL DECISIONS: PRO ET CONTRA

V. Podinovski, M. Potapov

Annotation

The paper presents results of the analyzing the popular weighted sum method (WSM).

Key words: multiple criteria decision making problems, weighted sum method, scales of criteria, weights of criteria, criteria importance, normalization of criteria.

**METHOD OF EMPIRICAL PROBABILITIES:
AUTOMATIC SYSTEM TO RECOMMEND THE FOLLOWING
TEN LECTIONS AFTER VIEWING THREE GIVEN LECTIONS**

V. Nikulin, S. Palesheva, D. Zubareva

Annotation

In this paper we present an algorithm and the corresponding experimental results, which were obtained online during the VideoLectures.Net ECML/PKDD 2011 Discovery Challenge (Track N2), where we were awarded a prize for the third best result. We propose to use two lectures (out of the given three lectures) in order to define a direction of the prediction. The relevance of the whole predicted set is calculated according to the remaining third lecture.

Key words: recommender system, collaborative filtering, online learning, ensembling, bagging, resampling.

**AUTOMATION OF THE TECHNOLOGY ROADMAP DEVELOPMENT.
CALCULATION OF THE INTEGRAL
INDICATORS OF APPLICABILITY**

O. Ena, K. Nagaev

Annotation

The methods of calculating of particular and integral indicators of applicability for the technological roadmap elements and their attributes are considered. These indicators are applied to the automated tools for the foresight researches, the long-term scientific and technological forecasting, identifying innovative trajectories of the emerging domains evolution.

Key words: technology roadmap, foresight, indicator of applicability, technology trajectory, knowledge formalization, expert survey, MAUT.

**REQUIREMENTS MANAGEMENT
IN IT PROJECTS**

T. Kravchenko

Annotation

In the paper an approach to modeling of requirements management process associated with IT projects is considered. The requirements management model includes three stages. The first stage is related with the choice of business requirements, which are described in the project solution and define the project scope. The second stage includes development of a model that is associated with accepting, rejecting, clarification or classification as 'additional task' for every of incoming user requirements. On the third stage for all the accepted user requirements priorities of system requirements are formulated; these priorities are subsequently used for project planning. The decision making models are based on the methods of analytic hierarchy process (AHP) and analytic network process (ANP), as well as on SuperDecisions decision support system.

Key words: requirements management, modeling of requirements management process, analytic hierarchy process (AHP), analytic network process (ANP), SuperDecisions decision support system.

**CREATING SMART-REGION'S
INFRASTRUCTURE THROUGH
THE DEVELOPMENT OF INFORMATION
TECHNOLOGY AND E-LEARNING**

B. Slavin, I. Yamalov

Annotation

The article presents the results of research and modeling of IT-industry growth in the Russian region through additional investments in e-learning. It is shown that such investments form the infrastructure typical for SMART region; increase the proportion of highly skilled jobs; create tools for the development of high-tech businesses.

Key words: electronic education, distance learning, SMART society, regional informatization.