

**METHODS OF PATTERN ANALYSIS
IN STATICS AND DYNAMICS,
PART 2: EXAMPLES OF APPLICATION
FOR SOCIAL AND ECONOMIC PROCESSES ANALYSIS**

Fuad Aleskerov, Veronika Belousov, Lyudmila Egorova, Boris Mirkin

Annotation

A survey of pattern analysis applications for dynamic macroeconomic analysis of countries, analysis of banking systems in Turkey and Russia, electoral behavior in the United Kingdom and Finland as well as long-term innovative development of regions in Russia is presented.

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

ON A METHOD OF VISUAL MODELS CLASSIFICATION

Tatiana Gavrilova, Dmitry Kudryavtsev, Irina Leshcheva, Yaroslav Pavlov

Annotation

Visualization is vitally important to enhance learning both in traditional and distant modes. Visual representation of knowledge boosts speed and quality of understanding of the material. Nowadays, you can find dozens of diverse visual languages. However, the choice of particular visual language is extremely difficult. The main reason for this is absence of clear guidelines for selecting the language. Our work is aimed at design and development of taxonomy of visual languages to cover this research gap. The type of knowledge that can be described by the visual language is the categorization principle of the taxonomy. Thus it can help to choose the visualization technique then the user understand what type of knowledge she wants to represent. This paper can be interesting for wide range of specialists, especially for professional teachers, communicators and business-analysts.

Key words: business modeling, visualization, taxonomy, knowledge, business education.

**RISK ASSESSMENT INFORMATION SECURITY SYSTEMS
ORGANIZATION WITH MATLAB SYSTEM**

Sergey Glushenko

Annotation

The article explains the usefulness of fuzzy logic to evaluate the risk of information security and offers fuzzy production model (FPM). The article presents the implementation process of a fuzzy rule base modeling through the use of specialized package Fuzzy Logic Toolbox software tool MATLAB. Implementation of fuzzy inference algorithm is implemented on the basis of Mamdani.

Key words: risk, fuzzy set, term set, fuzzy production model, the linguistic variable, rule base, the membership function.

**PRESENTATION AND COMPARISON METHODS
FOR SEMANTICALLY DIFFERENT IMAGES**

Georgy Kukharev, Ekaterina Kamenskaya, Nadegda Shchegoleva

Annotation

This paper discusses the methods of presentation and comparison for semantically unrelated images with assessment of their similarity in original feature space, and in Canonical Variables Space (CVS). The projection of the source images in CVS is implemented using two-dimensional canonical correlation analysis algorithm presented in this paper, and the measure of their similarity in CVS is based on the phase correlation.

Key words: comparison of semantically different images, canonical correlation analysis, phase correlation, SSIM.

APPLICATION OF THE EXPERT CLASSIFICATION PRINCIPLES FOR FORMAL CONCEPT ANALYSIS

Daria Stelmashenko, Sergey Soloviev

Annotation

The article is devoted to one of the methods of constructing a formal context lattice. The peculiarities of this method's algorithm are considered. It is suggested that the efficiency of this algorithm can be improved by the principle of expert classification.

Key words: formal concept analysis, expert classification method, principle of domination by specificity, specificity scale.

SCENARIO APPROACH TO THE RESEARCH INSTITUTE'S STAFF ALLOCATION WITH ATTENTION TO THE RISKS

Arkadiy Maron

Annotation

Formulation for the problem of optimal allocation of Research Institute's staff by type of work and customers is offered. It is appropriate to today's realities. The method of solution is developed. It is based on the theory of decision making under uncertainty.

Key words: distribution of staff, optimization, uncertainty, risk.

DYNAMIC MODEL OF ORGANIZATION OF CARGO TRANSPORTATION WITH A LIMITED CAPACITY OF THE DISTILLATION WAYS

Nerses Khachatryan

Annotation

In the paper [1] the model describing process of the organization of a cargo transportation with the given control system was investigated. Admissible modes of cargo transportation are studied, the question of stability of such modes is investigated, the domain of their stability is described. In this paper a modified model with additional resource restrictions is considered.

Key words: differential equations, stationary mode of cargo transportation, stability.

THE ELEMENTS OF DEVELOPMENT ENVIRONMENT FOR INFORMATION SYSTEMS BASED ON METAMODEL OF OBJECT SYSTEM

Pavel Oleynik

Annotation

In the paper the main structure elements of unified rapid development environment for information systems in various domains is presented. The structure of the data access layer, the method of application design and implemented projects are described.

Key words: information systems (IS), methods (pattern) of object-relational mapping, integrated development environment.