

ABSTRACT&REFERENCES

CONTROL PROCESSES

FORMALIZATION OF PROCESS OF FORMING UNIVERSITY'S INFORMATION IMAGE IN THE SOCIAL ENVIRONMENTS ON THE INTERNET (p. 4-8)

Roman Korzh, Andriy Peleshchshyn

Information image of a university in social services on the Internet is a mass-available information about a university on WWW websites and specialized services that provide the possibility of broad public discussion, modification and creation of new information directly at the location.

In the article the process of creating information image in social services on the Internet (II SSI) is researched and three stages are distinguished:

1. Activity of the information source;
2. Activity of the information generator;
3. Image generating activity based on generator's materials.

If each stage is carried out without external controlling actions, it is a natural unmanaged process of creating II SSI. However, in practice for large universities such processes are subject to be under control, though, not always with positive intentions regarding the university.

It was established that control on behalf of the university can be maintained at each of the stages, but absolute control aimed at obtaining significant effect should be maintained continuously at all stages

Keywords: the Internet, social communications, social environment of the Internet, university

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DEVELOPMENT OF TRAINING EXERCISE FOR SOLVING SYSTEMS OF LINEAR ALGEBRAIC EQUATIONS IN ADOBE CAPTIVATE (p. 9-12)

Kateryna Kovalova

The paper deals with the problem of developing e-books - the basic elements of electronic educational resources. One of the main issues of creating such web-books is highlighted, namely, algorithmization of creating training exercise on the example of solving a system of linear algebraic equations using Cramer's rule in the Adobe Captivate environment. The main features of training exercise is automatic help for students, as well as ability (even with wrong answers) to complete it with the corresponding theoretical explanation.

The main features of the Adobe Captivate environment - a powerful software program for creating electronic books, are described in the paper. Namely, one can record a sequence of actions on the screen, but it will not be a typical video track, but a set of interactive slides, in which users can repeat actions on the screen, choose something etc. Therefore, development of training exercise for solving the SLAE (system of linear algebraic equations) using Cramer's rule in the Adobe Captivate environment was a solvable algorithmized problem

Keywords: electronic educational resource, training exercise, Cramer's rule, Adobe Captivate

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METHOD FOR DETERMINING OVERALL INDEX OF LEVEL OF ORGANIZATIONAL KNOWLEDGE (p. 12-15)

Vira Iakovenko

For modeling the process of automatic control of the level of organizational knowledge and its evaluation, the model for improving

organizational knowledge was developed. For determining the level of organizational knowledge quality and its evaluation, the method was developed, that involves such factors as models, standards, evaluation method, control technology.

The method is a logical and mathematical description of the function components which represent essential properties of the process of evaluating the level of organizational knowledge.

For determining the overall index of the level of organizational knowledge, the expert evaluation method was used.

The generalized expert judgments were taken as the problem solution. Complex use of intuition, logical thinking and quantitative assessment with their formal processing provides an effective solution to the problem.

The proposed method allows quantitative and qualitative evaluation of the level of organizational knowledge that activates its self-improvement and self-development

Keywords: quality, level of organizational knowledge, overall index, expert judgments, ranking, competence

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THE FORMATION OF PROBLEM DOMAIN DICTIONARY (p. 16-19)

Natalia Borysova, Olga Kanishcheva

The currently available methods for automatic generation of terms and descriptions of the compatibility of semantic classes do result in the sufficient quality to completely eliminate manual work of experts. They however can give a first approximation to the required specification and to provide an expert with statistical data for further improvement of this description.

Thus, the development of methods for the automated formation of compatibility terms descriptions is timely, allowing to extract information about the compatibility of text collections, summarize and present it the way that experts can effectively work with. Another problem is taking into account the already formed and also the combinability descriptions existing in dictionaries to improve the effectiveness of automatic parsing.

This paper presents an approach to the formation of a compatibility terms dictionary of the subject area. The basis of the approach is the mathematical formalism of the algebra of finite predicates and predicate operations.

The algebra of predicates and predicate operations allows the to description of the semantic combinability of the two words standing next to each other which is determined by the composition of semantic roles. Between sets of semantic roles of words standing next to each other there is a binary relation which is a subset of the Cartesian product of these sets. The presence or absence of coordination between words is calculated using the comparator identification method

Keywords: automated processing of natural language, intelligent systems, algebra of finite predicates, lexicography

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FEATURES OF USING AGENT-ORIENTED APPROACH TO CONSTRUCTING SYSTEMS OF EDUCATIONAL PROCESS MANAGEMENT (p. 20-23)

Alexander Narozhnyi

The features of using the agent-oriented approach to constructing systems of educational process management are considered in the paper. The possibility of decomposing such a system into individual processes, which can be implemented using intelligent reflector agents, responsive to events caused by users or software subsystems, was shown. The model of educational system, based on multi-agent technologies, which include bases of knowledge, clients and a multi-agent system, consisting of software interface and intelligent agents, was proposed. The key element of the system is knowledge bases, which, in relation to other components, act as a meaningful subsystem, being of primary value. Also, the classes of tasks were determined, which can be solved by intelligent agents during organization and operation of the system, the most important are: resistance to user errors, organization of educational and decision-making processes, organization of work with databases and knowledge bases

Keywords: intelligent agent, decision making, multi-agent system, educational methods, knowledge base

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DEFINITION AND JUSTIFICATION OF FOOTWEAR CONSUMER PROPERTIES (p. 24-26)

Valentin Khimich, Anna Khimicheva, Anatolii Zenkin

It is noted that today buyers require from footwear not only attractiveness, but also proper consumer properties (wearing, aesthetic and functional). It is considered that the quality of any footwear depends on many factors, which can be divided in two groups. The first group includes the factors that affect the quality of footwear during its production (input raw materials, component parts, available modern technological processes and equipment, scientific and technical standard of project and design documentation, etc.).

The second group is represented by the factors which influence the quality of footwear during its transportation and sale (high-quality packaging and labelling, proper transportation and storage, standard conditions of sale, etc). It was found that for improving the quality and competitiveness of domestic footwear, it is necessary to monitor and control its consumer properties with high accuracy. Factors, which determine the quality of footwear, were analyzed and it is shown that consumer properties and competitiveness are the most significant, meeting wearing, aesthetic and functional demands of today's buyer. It was found that the quality of consumer properties should be controlled at all stages of footwear life cycle. Herewith, special attention should be paid to the quality of materials for footwear production. This approach allows classifying footwear defects into hidden and explicit, and timely developing methods for their elimination

Keywords: quality of footwear, competitiveness, control methods, materials, raw materials, consumer properties

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DEVELOPMENT OF METHOD FOR ENSURING BUS PRIORITY AT CONTROLLED INTERSECTION (p. 27-33)

Ihor Vikovych, Roman Zubachyk

The paper considers a new method that ensures bus priority at signal-controlled intersections. The main objective of the study is to substantiate the proposed method "a special lane at the intersection" and define the principles for its implementation. The method is based on creation of a spatial "corridor" at the area of intersection, using specially allocated lanes, which allow free access of buses to the stop-lines. Intersection passage is realized by means of adaptive control algorithms for traffic light signaling control, particularly through a special phase and the principle of split phase control. Six major types of special lanes that are implemented in the area of intersection and depend mainly on the availability and location of stops at the intersection, as well as the change of traffic direction, are proposed. The process of bus passing through a special lane in the area of intersection is viewed through the prism of a system which allows detailed determining the factors that define its geometrical parameters. The main stage of implementing this method is determining the length of a special lane on approach to the intersection and ways of traffic light signaling adaptation for ensuring time priority. The proposed method provides spatial-time bus priority at the intersections (including isolated), approaches of which have no more than two traffic lanes in one direction. Application of this method with more lanes (three or more) is appropriate when introducing the special lanes on the street sections with no breaks at the intersections is inefficient

Keywords: special lane, bus, priority ensuring, stop, signal-controlled intersection, street and road network

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ANALYSIS OF RELATIONSHIP BETWEEN SPEED, FLOW DENSITY AND TRAFFIC INTENSITY OF TRAINS AT THE RAILWAY LINE (p. 33-39)

Yuriy Chibisov

The analysis of relationship between speed, flow density and traffic intensity of trains at the railway line was made. The dependences of incoming and outgoing train flows on the train flow density were established. The dependence of incoming flow on the speed and average travel time of trains on the line and the accuracy of speed measurement was also established.

Thus, the relationship between speed, density and traffic flow intensity of trains on the railway station was analyzed. There was established that the saturation of traffic capacity causes a drop in average speed. Furthermore, we can conclude that it is impossible to achieve maximum traffic capacity, which is calculated according to analytical formulas. In fact, it was possible to reach approximately 90% of traffic capacity compared to analytical calculations. Furthermore, it should be noted that in case there are more than 70% of maximum quantity of trains on a railway line, there is a sharp decrease of the average speed rate.

Thus, for each railway line it is necessary to determine the value of rational saturation, and in case it is overloaded it is reasonable to reroute some trains on parallel railway lines.

Keywords: railway line, train flow density, incoming flow of trains, traffic intensity, computer-aid simulation.

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INCREASING OF RAIL TRANSPORT COMPETITIVENESS BY FORMING TRANSPORTATION AND LOGISTICS CLUSTERS (p. 39–45)

Evgeny Alechinsky, Vasily Mescheryakov, Evgenia Ryabovol, Ivan Lapushkin

The method of increasing the competitiveness of railways was considered in the paper. The models of development of rail transport of non-state ownership were given. As an example, Germany's practice was thoroughly discussed. A comparative analysis of Ukrainian and German railways was conducted. The analysis of principal documents, which are the basis for railways reformation in Ukraine and the Russian Federation, was given. The analysis of basic models of clusters functioning in the world practice was carried out. Transportation and logistics clusters in Spain, Denmark and Germany were examined in more detail. In particular, general description of port cluster in Valencia (Spain), border cluster in Padberg (Denmark), as well as regional cluster in Frankfurt-on-the-Main was given. The general scheme of transportation and logistics cluster functioning with the analysis of relations between the parties was proposed. The relationship between

the parties of transportation and logistics cluster were presented, advantages and disadvantages of the model were described

Keywords: transportation and logistics cluster, cluster models, competitiveness

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DEVELOPMENT OF METHODS FOR DETERMINING RATIONAL TECHNOLOGY OF EXCHANGE OF WAGON GROUPS IN TWO-UNIT TRAIN (p. 45–50)

Alexander Mazurenko

The method for determining rational technology of exchange of wagon groups in two-unit train at the maintenance station in operational conditions was developed. It is based on comparison of total costs caused by two-unit train servicing at the maintenance station, with possible technology versions. The method takes into account technical and technological features of the maintenance station, operational situation occurred at the time of two-unit train arrival, two-unit train stock and prognosis of wagons receipt. Moreover, the impact of extra wagons receipt on idle hours of wagons and amount of shunting operations was considered.

The method will allow making economically reasonable decisions on the operational use of various technologies of two-unit train maintenance, allowing for the influencing factors. In turn, this will reduce station costs as a whole

Keywords: railway station, technology, two-unit train, group of wagons.

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DEVELOPMENT OF THE TEST BENCH FOR RESEARCHING THE OPERATION QUALITY OF THE BEET CLEANER (p. 50-53)

Nikolay Ivanov, Andriy Hunko, Sergiy Shargorodsky

This article is devoted to a question of developing the test bench for carrying out laboratory researches of hydraulic drive of sugar beet heads cleaner. In the publication the issues of configuration of the test bench, creation of measuring system and system of imitating the loading in different modes are considered. The controlling-measuring system is based on the analog-digital converter. The analog-digital converter collects information from eight sensors and transfers it to a personal computer. This measuring system also consists of four pressure sensors and four accelerometers TGP-1A, which are used as angular rate sensors. The pressure sensors are produced by the Danfoss corporation. Environmental stress on shafts of three hydraulic motors is carried out by three powder breakers. Environmental stress on shafts of fourth hydraulic motors is carried out by crank mechanism that moves task tools in horizontal plane. The total error of measurement is 4%, aimed at meeting the requirements of agricultural equipment

Keywords: sugar beet cleaner, hydraulic drive, test bench, measuring system

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ESTIMATION OF MOTION SAFETY ON STREET-ROAD NETWORK ELEMENTS (p. 54-56)

Alexander Sviderskiy

The paper gives the results of studies on the estimation of safety level of the road network elements. The models of changing the probability of traffic accidents at intersections and road network sites were proposed. The study of the impact of road and transport factors on the probability of traffic accidents was conducted. As a result of studies, it was concluded that increasing the number of lanes leads to increasing the probability of traffic accidents. Also, with increasing the traffic speed and pedestrian flow intensity the probability of traffic accidents increases, since at the high speed the driver has always less time for maneuvering and almost always has no time to perform some actions on driving

Keywords: accident, traffic parameters, traffic intensity

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QUALITY ASSESSMENT OF COMBINED PACKAGING MATERIAL USING DESIRABILITY FUNCTION (p. 57-61)

Antonina Dubinina, Olha Kruhlova, Svitlana Lehnert, Tetiana Letuta

The possibility of using the Harrington's desirability function as a tool for integrated quality assessment of combined packaging material, developed on the basis of natural components (paper, chitosan, wax), was considered. The stages of integrated assessment using the Harrington's method were determined. Its appropriateness for assessing the quality of multilayer packaging materials was noted. The conducted integrated quality assessment of the developed combined packaging material, using the Harrington's method, confirmed the appropriateness of using three wax layers in material. In accordance with the Harrington's desirability scale, the designed packaging material has a "good" mark. It was found that for preserving fruit and vegetable pastes and sauces the combined packaging material should have steam-proof properties up to 2 kg/m², water absorption - no more than 0.1%, adhesion - no less than 25 MPa

Keywords: integrated quality assessment, Harrington's desirability function, combined packaging material

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CARGO OWNERS' RISKS IN CARGO DELIVERY BY SEA TRANSPORT (p. 61-67)

Svitlana Onyshchenko, Sergii Shpilko

The cargo owner's risks during the cargo delivery by sea transport were analyzed. This problem was considered at the operational level, i.e.

in conditions when price parameters are clearly defined, market fluctuations do not affect the final result, that is, the profit of exporter (importer) – cargo owner on the sale of cargo consignment delivered by sea.

Decomposition of risk factors, such as time deviation, loss of quantity and quality of goods, was made on the basis of the structure of cargo delivery system (delivery scheme, technology and participants). Expression for the profit of exporter (importer) – cargo owner on the sale of consignment was obtained with account of transportation risk. The methodological approach to determining permissible deviations of delivery time, quantity and quality losses in terms of financial result of export (import) was proposed

Keywords: risks, factors, delivery system, sea transport, cargo owner, decomposition, profit, probability

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