

Yu. Krasnitsky. Magnetic Field of Catenaries on Low Frequencies, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 9–15. (in Russian)

Magnetic field of separate transit of transmission line in quasi-static approximation without taking ground influence into consideration is viewed. The procedure of Cartesian components calculation of this field vector when current filament of arbitrary geometrical form serves as its source is examined. It is based on the algorithm using piecewise linear approximation of wire form. The peculiarities of the algorithm aimed to the increase of calculation accuracy are discussed. For configuration description of transmission line wires taking into consideration the influence of gravity the catenary's equation has been used. The investigation of the influence of catenary's magnetic field structure from the position of observation point situated in the near zone towards transmission line has been conducted with the help of computing experiment. Spatial pictures of fields presented and discussed in the paper are illustrated its results. All calculation procedures are realized with the help of Matlab computing system.

Keywords: catenaries, frequencies, magnetic, field

V. Demidov. Application of Data Verification Increase in Decision-Making Systems on the Latvian Railway, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 16–22. (in Russian)

This article deals with the methods of data reliability increase in Passenger Decision Support System of Latvian Railway using the hierarchically connected views in the IBM UDB DB2 relational database management system. Also the questions of increasing the system productivity are analysed and an example of making a complex report on the passengers commuted along the railway sectors and lines is given.

Keywords: reliability of data, verification, hierarchical views, materialized views

I. Yatskiv, L. Gusarova. Methods of Identification of the Number of Clusters with Classification without Teaching, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 23–28. (in Russian)

The problem of identification of the number of clusters is one of the main not solved tasks of cluster analysis till nowadays (non-parametric case of classification).

There are different formal approaches easing the procedures of identification of the preferable number of clusters. These approaches are called as stopping rules. Milligan and Cooper have investigated more than thirty of them. In the paper two local and global stopping rules are viewed, and the advantages and disadvantages of the application of these rules are considered on the example of classification of the European countries according to the level of transport development.

Keywords: cluster analysis, number of clusters, stopping rules

V. Liunkis. Some Problems of Punctual Evaluation of Distribution Parameters, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 29–33. (in Russian)

In the given paper the analytical computations for the solution of the observation problems according to the method of maximum probability of evaluation parameters of logistical

distribution are presented, as well as its numeral realization according to the certain sample data with Mathcad 7.0 package application. Some additional properties of the deduced evaluations are presented there.

Keywords: evaluation, methods of moments and maximum probability

T. Mamirov. Digital Phase Units with Complex Coefficients, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 34–38. (in Russian)

New structures for realization of first order phase units with complex coefficients are proposed. Possibility of application of these units is shown.

Keywords: phase units, bi-lines, optimal realizations

A. Nõmmik. Use of Geographical Models for Airlines Network Modelling, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 39–44. (in Russian)

The middle of the last century was a favourable time for human geography modelling. One of the most popular models was a “gravity model” which comes from physics where the role of potential is usually played by a population quantity in cities - central places.

Modern air transportation hub-and-spoke system is frequently used as a network example in geographical studies. More and more geographical papers have been written about airlines industry spatial developing. This paper presents a gravity model used in geography and is searching for its availability for the airlines network modelling. The results of the analysis show the adaptability of the gravity model for the airlines hub-and-spoke network modelling on the Tallinn Airport passenger flow cases.

Keywords: air transport geography, gravity model

N. Petukhova. Method of Access Provision to Relational Systems Data on Ratio Row Level, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 45–52. (in Russian)

In the given article the author has shown the method of increasing safety of information systems realized in the active relational databases environments. The method is based on restriction of access to table records for selecting, updating and deleting operations.

Keywords: security, relational database, mandatory and discretionary access control, trigger, view

Yu. Sikerzhitsky. Parallel Indicators of Radio-Frequency Pulse Arrival Time with Readings Processing in Real Time, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 53–57. (in Russian)

Relatively large sluggishness of optimal indicators of arrival time of radio-frequency pulse of high duration considerably restricts opportunities of application of correlation type indicators in temporal synchronization channels. In the given paper methods of technical implementation of devices for processing of relative temporal readings that are integral part of multi-channel quasi-optimal indicators of arrival time of radio-frequency pulse of high duration.

Keywords: radio, frequency, pulse, real, time

M. Bogdanov, V. Liumkis, M. Gill. Application of PHP Language Constructions for Project Testing Devices Design, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 58–65. (in Russian)

In the paper the special software device that allows classifying project requirements, performing graphical visualization of their interrelationship, performing detailed information analysis arising when evaluation document circulation is viewed.

The approach for implementation of methodological constructions on the PHP language with the accent on software part is proposed with the aim of increase of server processing of information stored in MySQL database.

Keywords: PHP language, construction, testing, project

V. Skudnov. Analysis of Connection Automatic Reconstruction Algorithm with Relay Application, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 66–70. (in Russian)

Main versions of connection reconstruction algorithms when using automatic relaying are viewed. Values of time expenditures coefficients for the establishment of connection and mean value of served duty intensity are defined. The dependence of mean value of this duty from channels capacity and geographical conditions of communication systems functioning with mobile subjects is found.

Keywords: time expenditure coefficient, duty, service, intensity

A. Troyanovsky, B. Tsilker. Efficiency Evaluation of Automatic Dependent Surveillance and Mobile Objects Movement Control on Airport Territory, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 71–73. (in Russian)

Methods of automatic dependent surveillance system efficiency evaluation as well as mobile objects on-ground movement control approved in conditions of the acting airport are viewed here. Local differential subsystem of global navigation satellite system implemented as basic station and GNSS-transponders of mobile objects serves as a technological base of the investigated automatic dependent surveillance system (GNSS). Natural and artificial heights (hills, forest, buildings) are the reasons of shading of separate areas of controlled surface. It leads to reduction of quantitative construction and change of configuration of the observed constellation of navigation satellites, and, thus, to the reduction of automatic dependent surveillance.

The description of methods and simplified expressions for the definition of borders of reduced accuracy zones of navigation and temporal definition of automatic dependent surveillance taking into account specific airport conditions are presented.

Keywords: GNSS, dependent surveillance, shading

V. Kuzmin. Application of Neuron Networks in Q-Learning Algorithm, *TRANSPORT and TELECOMMUNICATION*, vol. 4, No 1, 2003, pp. 74–86. (in Russian)

The paper is dedicated to the investigation of Q-Learning algorithm, which refers to the group of reinforcement learning algorithms. Various modifications of the given algorithm together with methods that allows speeding up the process of learning when using neuron networks are viewed. Alternative methods of approximation of Q-values table are presented. Also, the experiments conducted with the software simulating the behaviour of robot in the continuous environment in the process of which periodically change of its configuration has taken place with the aim of preparing robot for functioning in various typical environments are described. The selection of optimal parameters of the viewed algorithms is done. The analysis of the obtained results is performed. The evaluation of the algorithms output according to two criteria: number of necessary corrections of neuron network scales and learning quality is given.

Keywords: reinforcement learning, Q-Learning, neuron networks