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Preface

The Second International Conference on *Decision Support for Telecommunications and Information Society DSTIS-2002*, organised by the National Institute of Telecommunications in Warsaw (5th – 7th September 2002), assembled researchers working in several modern and important fields of telecommunications and computer science. Some papers submitted to this conference are presented at this issue.

Domains of *decision support and optimisation* are represented here by five papers. One of them is devoted to the procedure for finding the optimal decision in the case when information about the state of nature and utility functions is imprecisely defined. The next paper shows how the class of reference point methods can be reduced to the class of weight methods, so it is possible to implement both classes in the same technical framework. Another approach to reference point and vector optimisation applies evolutionary algorithms, using them in an interactive mode. The problem of allocation of limited resources among competing activities is also presented, showing how to achieve the best overall performances with fair treatment of all activities. The last paper of this group describes two ideas of modifying projection methods for the case of nonlinear optimisation.

The set of papers devoted to *network modelling and design* starts from two descriptions of new developments of a multiple objective dynamic routing method for multiexchange networks, that enables numerical calculation of global network performance parameters. Dynamic routing problems are also considered in the next work which shows that they may be interpreted as optimal control or regulation problems, and solved with the use of well known methods. Afterwards the topological network design is described as optimisation problem, determining network structure and allocation pattern that would minimise the cost of the network, using various algorithms. Another optimisation method is proposed for reconfiguration of the IP over optical network, in order to balance the load of network elements.

Tools for intelligent systems are presented in four papers. A theory is described that defines contextual probability function satisfying all axioms of probability and therefore generalising the classical probability theory. The author of rough set theory considers some relationship between Bayes theory and rough sets, using flow graphs and decision rules. The next elaboration proposes modified training algorithms for artificial neural networks, in which the initial weight configuration remains unchanged throughout the training process. Qualitative features of decision problems can be represented by classical influence diagrams but their usefulness is enlarged if time is introduced as special parameter, what is described in appropriate paper.

Data mining is the subject of the last group of conference papers. The first paper presents a method of computerised generation of hypotheses (as a kind of association rule) based on given data, represented as a matrix of objects and attributes. The second one suggests several models of data mining operations, based on the concept of information system. The last paper describes the new form of quantitative and multi-dimensional association rules that may be used for cellular network planning.

Decision support is needed in almost all domains of human activities and presented here set of papers shows some possibilities.

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Guest Editor