

Preface –Thematic Issue on Multiple Criteria Decision Making (MCDM)

The present thematic issue of the journal is dedicated to the research work of Prof. Dr Vassil Vassilev and his research team. They conducted long-term investigations in the areas of discrete, linear and non-linear continuous single-criterion and multiple criteria optimization, as well as in the development of decision support systems.

The research work in the area of single-criterion integer optimization resulted in the development of efficient approximate algorithms of internal and external feasible integer directions, as well as in the development of approximate algorithms for optimal control in transportation systems, which were implemented in the automated systems ASTRA and TRASY for real-time control of the industrial truck haulage in open-pit mines.

Due to the research activity and tutorial work of Prof. Dr Vassil Vassilev at IIT-BAS and some of the biggest Bulgarian universities for more than 25 years a scientific school, conducting intensive scientific research in the area of MCDM, was created. The team has achieved notable results in the development of methodology (interactive methods, based on the scalarizing approach) and software systems for solving linear, nonlinear and discrete MCDM problems. The most well-known methods, developed by Prof. Dr Vassil Vassilev and his research team, are the interactive methods, based on the reference direction scalarizing problems, the modified reference point scalarizing problems, the discrete scalarizing problem, the classification-based scalarizing problems as well as the generalized scalarizing problems. These new methods for solving MCDM problems are implemented in a number of decision support systems, developed at the Decision Support Systems Department of IIT-BAS, such as MOIP, MONIP, MKO-1, MKO-2, MKA-1, MKA-2, MultiDecison, MultiOptima, Optima-Plus and others.

The present issue contains two types of papers: five papers on MCDM methodology and two survey papers on the achievements of Prof. Dr Vassil Vassilev and his research team at IIT-BAS in MCDM methodology and software systems, as well as two papers on the applications of decision support systems in solving certain optimization problems.

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