INTELLIGENT SUPPORT METHODS
FOR FORECASTING INNOVATIVE SOLUTIONS IN BME

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The trend of implementing decision support methods for planning, forecasting, and optimizing certain processes in various industries continues. In recent years, the integration of artificial intelligence technologies into these methods has been intensively developed. Intelligent decision support systems (DSS) are increasingly being implemented in both purely technical areas and in the healthcare sector. Methods of forecasting the development of open nonlinear systems, which include medical and technical systems of biomedical engineering, are becoming more widespread [1, 2]. This interest of scientists produces a significant number of studies on these issues, which requires evaluation and analysis.

The selection of optimal solutions in multicriteria problems remains an urgent problem, given the constant increase in alternatives and selection criteria, especially when assessing and predicting the behavior of open nonlinear systems. New methods of combining AHP, MAHP, ELECTRE, TOPSIS and SMART methods and others are being introduced. Criterion selection technologies are being improved, and the efficiency of classification algorithms is increasing. However, the optimal ratio between the resistance of the proposed methods to noise, which is critical for tasks with high reliability requirements, such as the medical field, computational complexity, speed, and the ability to compare alternatives in the face of a conflict of criteria, has not yet been found [3].

One way to solve these problems is to implement the TRIZ principles. Especially for intelligent DSS, the fundamental feature of which is the availability of feedback and the ability to adapt to changes in input processes. Methods are being developed to implement TRIZ at different stages of decision support. The basic principles of the theory are actively used, such as the laws of technical systems development, search for contradictions in system development, etc [1]. The greatest use of TRIZ principles is observed in improving methods for forecasting the development of technical, biological and social systems. However, the peculiarities of applying the theory's principles to the forecasting of biotechnical and medical-technological systems, taking into account their emergence, remain a matter of debate.

References:

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