Development of methods of analysis, forecasting and diagnostics of processes with uncertainties on the basis of Bayes theory

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On the basis of existent Bayes theory of evaluation and statistical conclusion forming, it is proposed the development of new methods of mathematical description of processes with structural and statistical uncertainties with the purpose of their deep research, behavior forecasting, automatic diagnostics and management. In particular, the Bayes networks proposed in literature, which are the effective instrument of data and knowledge presentation in quantitative and qualitative forms, will be used for description of static and dynamics of processes.

There will de developed the new method of studies of network in the form of pointed graph, and forming on its basis the conclusion with providing of network's openness for inputting new information with the purpose to raise the quality of result, that is, forecast or control influence.

The method belongs to the artificial intellect sphere, and provides the effective evaluation of probabilities of events with the help of iteration algorithms of data and object knowledge processing. The method proposed differs with highrate of network studies and high efficiency (accuracy) of difficult static and dynamic processes exploration at the presence of uncertainties of statistical and structural type.

Directions of application of the method given are the following: situational analysis in economics and complex technical systems; computer-aided systems of diagnostics and localization of refusals development; information searching systems; independent unpiloted submarine objects control; diagnostic systems in medicine, etc. Introduction of results is expected on the objects of Ministry of Defense with the purpose of upgrading diagnostics of technical systems, on manufacture enterprises with the purpose of determination of optimum strategies of their development, in Ministry of Extraordinary Situations with the purpose of nonpermanent events prognostication.