

## **MIVAR technology as a new generation in Artificial Intelligence (AI)**

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The aim of our numerous scientific studies based on the theoretical fundamentals published by D.Sc. (Tech.) Oleg Varlamov (BMSTU), appeared for the first time in 2002, is to create AI with the help of increasing automatization of human activity in different spheres of life such as information security, automated data processing (ADP) and data control (DC) systems, industrial automatic control system (IACS), medical image processing (MIP).

We have had to implement system approach, develop more complicated modeling, data accumulation and logic processing instruments to solve previously mentioned tasks. From our point of view, the results should be able to increase computational intelligence, widen spheres of automatization of human activity and create next generation AI based on mivar networks.

**MIVAR = Multidimensional Informational Variable Adaptive Reality.**

MIVAR approach unifies and develops achievements from different scientific domains: databases, computational problems, logic processing, and includes two main technologies:

1) MIVAR technology of information accumulation – is a method of creating of global evolutionary bases of data and rules (knowledge) with changeable structure based on the adaptive discrete MIVAR information space of unified representation of data and rules which bases on three main definitions: “Thing, Property, Relation”.

2) MIVAR technology of information processing - is a creation method of the system of logic inference or “automatic construction of algorithms from modules, services and procedures” based on the active MIVAR net of rules with lineal computational complexity.

MIVAR technology of information accumulation is designed for keeping any information with possible evolutionary change of its structure and without any restrictions of its volume and the form of representation.

The MIVAR technology of information processing is designed for the processing of information, including logic inference, computational procedures and services.

There are three basic stages of MIVAR data processing:

- 1) Creation of the MIVAR matrix for the description of subject domain;
- 2) Working with the matrix and the construction (designer) of the algorithm for solving of the required problem;
- 3) Execution of all computations basing on the acquired algorithm.

The first stage can be seen as the formalization of subject domain in the form of productions with the following transition to the MIVAR rules: "input objects – rules/procedures/services – output objects".

Currently, it is the most difficult stage that requires the participation of a human-specialist (expert) for creation of the MIVAR model of subject domain.

On the second stage, automated construction of the algorithm and logic inference is being implemented. The input data is represented in the form of the MIVAR matrix of the description of subject domain and specified input (“GIVEN”) and required (“TO FIND”) objects-variables.

On the third stage, the process of solution basing on the obtained algorithm is being executed. For the moment, in the software complex Universal Designer of Algorithms (© O. Varlamov, 2002) the work of the second and the third stages is combined. Currently, there are different realizations of the MIVAR method and in some of them, three main stages are processed separately.

In fact, based on a new technology, MIVAR nets allow to develop production approach and to create at last an automatic learning logically thinking system. MIVAR approach unifies and develops production systems, ontology, semantic nets, service-oriented architectures, multi-agent systems and other modern information technologies.

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