

Formalization and Knowledge Gaining Problems in Intellectual Systems

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Abstract— Knowledge is the achievement of the humanity. The efficiency of the technical and intellectual technologies is stipulated by the gained knowledge, evaluation and presentation. The artificial intellectual systems are widely used for the professional, cognitive, entertaining, scientific and composing aims.

Keywords— intelligent systems; knowledge

I. ACTUALITY OF THIS WORK

The major problem of building the intellectual systems is to gain the knowledge. The quality of the problem solving and the efficiency of the working system are dedicated to the quality of the knowledge that is mobilized in the knowledge base. The synthesis of the knowledge base is not just the difficult scientific problem, but long labor-consuming and the week structured process. 90 % is spent on the process of formalization and gaining of knowledge while forming the knowledge base systems and everything this is formalized by the experts and knowledge engineers' united effort.

II. THE OBJECT OF RESEARCH

It is possible to choose 6 stages in the intellectual system technologies that are based on the knowledge base. These stages are: Problem selection, Collaborate the prototype, prototype processing until it is manufactured, evaluation of the intellectual systems, unite and supporting. It is also possible to choose 6 more stages in the second stage. These are: Problem identification, knowledge gaining, knowledge structuring and formalizing, prototype realization and formalization, prototype realization and testing. Herewith it is important to form the scientific and acting prototypes and their gradual modification and broadening.

The methodology of gradual broadening of the forming the intellectual systems are based on the fast prototype conception. Prototype is one or several variant of the simplified version of the system that demonstrates the liveliness of the chosen point of view and the right decision. The fast prototype technologies are considered to be useful in the circumstances of not having formal methods how to work with knowledge. It gives us chance to check empirically the correctness of the adopted decisions of the projects at every system forming level.

III. THE PROBLEM OF STUDYING THE SITUATION

Existence of lingual, gnosiological and psychological problems are the characters of gaining knowledge. The above mentioned problems are discussed for to release the interacted work of the knowledge engineers and for to increase the efficiency of the gained knowledge. There are involved knowledge engineers, programmers and the knowledge resources which may be experts or some material resources such as (books, monographs, articles, instructions and etc) and empirical facts, examples and many other facts, herewith there may be involved the knowledge engineers and experts may conduct different functions in the knowledge gaining process. (Figure.1).

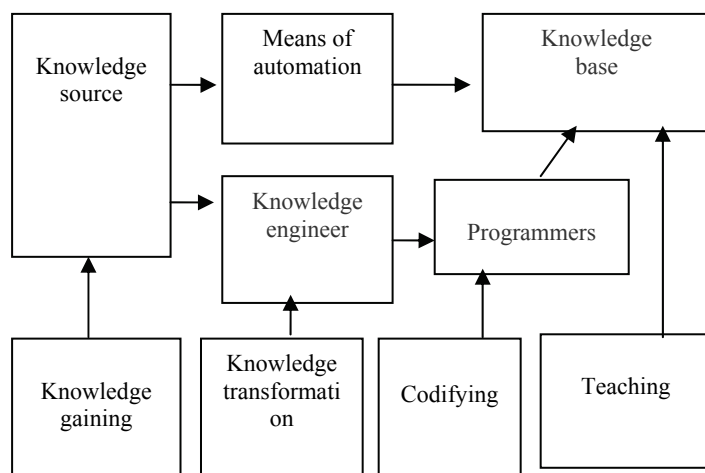


Figure 1. The knowledge gaining process

IV. RESEARCH GOALS AND OBJECTIVES

Maximum automation of the knowledge gaining and formation process of system prototype is expedient. The main aim of the knowledge gaining automation is to ease the effort of the knowledge engineer and the expert. There are two ways to solve this problem: Partly deliver the functions of the engineers to the automation system, total disconnection of knowledge engineers and experts from the whole process and transferring their functions to the knowledge gaining automation systems.

Using the knowledge gaining automation system gives us to realize three knowledge gaining strategies: according to the first strategy expert together with the help of the artificial intellectual systems conducts the main functions. (1) The expert conducts structuring systemizing and formalizing with the help of this work. As the result of this we can receive the ready forms for the direct codifying and bringing in the data base. This kind of strategy gives us chance to disconnect the engineer from the technological chain and to transfer his duties to automated systems.

Due to the second strategy the leading side in the discussion is the automation system. According to the experts' answers the artificial intellectual system constructs the ready forms of the knowledge and then gives it to the other components to connect them to the base. Knowledge engineer is totally disconnected from the discussing technological chain.

The third strategy is connected to the disconnection of on one hand the knowledge engineer and on another hand the disconnection of the programmer from the classical technologies. Fulfilling process of such artificial intellectual systems with the knowledge is conducted with the help of the knowledge editor without changing the logical conclusion mechanism. The main function of the editor is to fill the data base with the sufficient knowledge by the expert.

From the technological point of view it is essential to solve the problem connected to the knowledge work that will realize the knowledge selecting method, formalizing of knowledge and composing the artificial intellect system that will carry out the idea of the knowledge automation by the expert itself.

Knowledge gaining methods are mainly dedicated to the direct dialogues with the experts. These are automatic processing methods of texts.

Text methods besides their simplicity and triviality are very rarely worked out. These methods are dedicated to not only the understanding of the text but the division of the base schemes and attitudes or structural forming of the subject spare. The main aim of these methods are knowledge gaining by the knowledge engineers themselves from the material sources such as monographs, books, articles and instructions.

Text cut is one of the methodical bases of the texting procedures. Texting methods are the most labor-consuming work and their use is advisable while forming the artificial intellectual systems on its initial level.

As a result of the texting technologies the knowledge finding and gaining methods are significantly improved because texting on the associated bases of the connection s is the organization of the writing and reading.

The pre-conditions of the effective solving of the knowledge gaining process form the new conceptions connected to the knowledge work such as the formal methods of knowledge gaining, text processing automatic method on the bases of the statistic semantic units. It has to be mention that the new tendencies connected to the knowledge are still in progress and they are not used practically.

Passive and active communication methods also belong to the experimental methods. These methods foresee the dialogues and the discussions of experts and the knowledge engineers and they are discussed as the diversity of interviews.

Communicating methods do not have formal explanations and they have quality nature. Due to them knowledge gaining is connected to the expert observation and the subjective interpretation of the knowledge engineers. They also ask the verbal expression from the expert that is too difficult. Negative results will be followed for the inaccurate and inadequate verbal description of the existing processes and heuristic methods. Their characteristics are: The difficulty in expressing of the procedural knowledge; the intuition of expert and the difficulties in describing the gained knowledge; the labor consuming of experts and the knowledge engineers.

The communicative methods are distinguished with low efficiency, in view of the fact that the huge part of it is wasted during the working process of the expert and the knowledge engineer. Cultivating new methods is one of the newest ways for the improvement of knowledge where the functions of the knowledge engineers are transferred to experts.

The difficulty in finding and gaining the knowledge by experts stipulates the development of the knowledge gaining methods that are the bases of gaining their knowledge automatically. Their advantage is in decreasing the inaccuracy and the time for gaining knowledge.

V. THE RESULTS OF THE RESEARCH

We have to figure out that there is no perfection of realized knowledge in the current knowledge base. The lack of these characteristics is caused by the disabilities of the knowledge conceptions of the models, the lack of the knowledge of the subjects, incomplete knowledge in hoe to get education and inappropriate types for knowledge gaining.

We think it correctly the maximum automation of the knowledge gaining and presenting processes. On the technological point of view it is essential to solve the problem connected to working with knowledge that will realize the selection of learning methods the formalization of knowledge and forming the system that develops artificial intellect that will fulfill the idea of knowledge automation by the expert itself.

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