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ІТ-ПРОСТІР СЬОГОДЕННЯ: ТЕНДЕНЦІЇ, ІННОВАЦІЇ ТА ПЕРСПЕКТИВИ РОЗВИТКУ

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MINISTRY OF EDUCATION AND SCIENCE
OF UKRAINE
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**IT-SPACE OF TODAY:
TRENDS, INNOVATIONS
AND DEVELOPMENT PROSPECTS**

Collection of abstracts
of the II International Scientific and Practical
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INTELLIGENT METHODS FOR DIALOGUE SYSTEMS WITH NATURAL LANGUAGE INTERFACE

The purpose of the study is to develop an algorithm for an intelligent system that is able to conduct a dialogue with the user in natural language. The result of the study is to analyze the existing modern methods of building dialogue systems with a natural-language interface, which is based on an ontological description of processes and objects of the subject area, as well as software that implements this method.

The rapid development of modern computer technologies, as well as computer equipment, makes it possible to solve more and more complex problems in various

spheres of human life. Considerable attention of computer technology researchers is increasingly drawn to rather complex formalized tasks, such a task is the task of communication between man and machine in natural language.

One of the most important tasks of artificial intelligence is to facilitate communication between humans and machines, in particular, to ensure the ability to communicate in natural language. The implementation of the defined goal of the study is to create natural language interfaces, i.e. programs that perceive a text message in natural language and are either able to translate it into a certain formal language or perform certain actions in accordance with a certain received message.

Such examples of formal languages are database query languages, as well as control languages for robotic systems, etc. Thus, the natural language interface is a rather complex program that consists of several components that perform sequential text processing and recognition based on linguistic methods and use one or more dictionaries.

Conducting text analysis is a very urgent problem due to the rather complex structure of certain natural language (PM) texts, it is a tendency to informatize society, which is due to the need for natural language processing in the process of creating intelligent systems.

The fields of application of PM text analysis systems are quite diverse. The main among them are search engines, interrogative response systems, computer-aided machine translation systems, data and knowledge acquisition systems, as well as education systems with a certain function of knowledge control, etc.

Linguistic processing of texts in natural language is increasingly becoming one of the main problems in the process of intellectualization of information technologies. Significant attention is paid to this problem in developed countries of Europe and the USA, which is confirmed by the allocation of significant funds for the development of language software. A huge number of existing scientific programs are aimed at the development of linguistic information systems.

The rapid development of the Internet and other communication and computer technologies makes this problem even more urgent. Thus, since the mid-50s of the last century, significant efforts of scientists have been directed to the development of algorithms and computer programs for natural language processing of texts. In order to carry out the process of automating the analysis and synthesis of texts, a variety of models of text processing processes were created, as well as appropriate algorithms and structures of data representation.

Thus, traditionally, the analysis of texts in natural language was presented as a sequence of processes, namely: syntactic analysis, morphological analysis, semantic analysis. For each of the defined stages, appropriate models and algorithms were created.

Thus, for textual semantics, there are classical semantic networks and Minsky frame models, for sentence syntax, there is Chomsky's grammar, the grammar of the Saint's system, the subordination tree and the Gladky component system, the extension of the transition network. Many different models for morphological analysis have also been developed, which focus on specific groups of languages.

The most difficult problems of processing natural language texts are problems that arise due to the phenomena of polysemy, homonymics, etc., which create ambiguity and significantly complicate the task of correctly displaying the semantic and syntactic structure of the text in its formal logical representation. All these problems are solved at the level of semantic analysis.

The purpose of the work is to develop a method for building an intelligent system capable of conducting a dialogue with the user, as well as providing the requested information through the use of natural language. Based on the defined goal and the analysis of the subject area, the following tasks were set:

- 1) analysis of approaches to natural language processing;
- 2) description of the method of natural language analysis using ontologies;
- 3) description of methods based on linguistic analysis of the text;
- 4) application of the proposed method in an intelligent dialogue system.

It should be emphasized that in a fairly broad sense of the word, artificial intelligence (AI) is a scientific direction within which certain tasks of hardware or software planning of those types of human activities that are traditionally considered intellectual are established and solved. At the same time, the definition of the term "intellectual" in the designation of types of human activity means that until recently only a person could perform them.

Thus, AI is a scientific discipline. Thus, in the narrow sense of this definition or word, artificial intelligence is a software system that imitates human thinking with the help of a computer. In the scientific theory of AI, the following main areas of research can be distinguished, namely: firstly, general theoretical, which is associated with the development of models and methods for implementing certain aspects of obtaining and transforming knowledge, and, secondly, applied, which is aimed at developing complex technologies for end users.

In modern times, artificial intelligence technologies are actively developing, for example, in recent years, quite large global companies have been developing intelligent interlocutors-assistants, whose purpose is to simplify and automate the process of using mobile equipment. Now it is clearly observed how systems that use natural language interfaces for user interaction greatly simplify the process of processing electronic devices and household appliances. The creation of PM systems is also important for the creation of tools that will facilitate the work with a variety of types of devices for people with disabilities.

The topic that was worked out in the work is quite relevant, since in the process of its implementation, a variety of methods and approaches to the development of systems that use communication with the user using natural language were considered, and some significant changes in the methods of building such systems were proposed. Summing up the results of the work performed, it becomes necessary to consider the current situation in the field of automatic processing of tests, in particular in the tasks of semantic analysis of texts.

Based on the definition of semantics in linguistics, as a science of understanding and designating sequences of symbols, research and practice in this area are not always aimed at determining the semantic meanings of certain textual

constructions, but, for example, the results of semantic analysis are formed in the form of frequency characteristics of text words in tabular form.

Another problem in the analysis of textual information is the construction of a formalized description of objects and phenomena of the real world, which would be convenient for use in the tasks of computational linguistics. In the work carried out, there was an attempt to simplify the excessive complexity of creating a formal description of objects and processes using methods and means of ontological description according to the principle of extended dictionary definition. As a result of the study, the following results and conclusions were obtained:

1) the proposed method of ontological description of the concepts of the subject area, which provides a generally accepted dictionary description of concepts with the addition of additional characteristics;

2) the proposed algorithm for semantic analysis of the text of the PM, based on the ontological description of the topic and processes of the subject area of the text, as well as the distribution of role relations between the participants in the process and associative relations with the concepts of the subject area.

References

1. Pereyaslavskaya Svitlana. Study of natural language processing methods for creating intelligent systems, such as chatbots and automatic translation systems / Svitlana Pereyaslavskaya, Olga Smagina // Bulletin of Khmelnytskyi National University of Technical Sciences. 2025. Issue 349(2). pp.100-108. DOI: <https://doi.org/10.31891/2307-5732-2025-349-14>.

2. Kotsyubivska K. I. Concept of chatbot as an intellectual dialog assistant. / K.I. Kotsyubivska, O.V. Tymoshenko, M.M. Guziy, V.V. Lysynyuk // Digital platform: information technologies in the socio-cultural sphere. 2023. Volume 6 No. 2. pp. 329–340. DOI: <https://doi.org/10.31866/2617-796X.6.2.2023.293598>.

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NEURAL NETWORK IMPLEMENTATION OF SOLVING DISCRETE OPTIMIZATION PROBLEMS

The purpose of the study is to solve the problem of minimum coverage on the graph. As a result of the work, a neural network model was developed to solve the problem of minimal coverage. During experimental modeling, the influence of choosing the initial states of the Hopfield neural network model on the quality of the results was investigated. It is concluded that the neural network method showed a greater time complexity of solving the problem than the method itself.

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Електронне наукове видання
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Можна використовувати в локальному та мережному режимах

ІТ-ПРОСТІР СЬОГОДЕННЯ: ТЕНДЕНЦІЇ,
ІННОВАЦІЇ ТА ПЕРСПЕКТИВИ РОЗВИТКУ

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