RESEARCH ARTICLE

THE SHAPES OF MATHEMATIC MODELS IN COMPUTER LINGUISTICS DISCOVER

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Manuscript Info	Abstract
	This article provides an overview of the specific trends and models of computer linguistics that are emerging as information technology evolves. Modern mathematical models can also be considered. It is possible to trace the origin of mathematical linguistics based on computer linguistics and this article will focus on it.

Introduction:-

At the present stage of development of information and communication technologies, introduction of modern technologies into the social learning process becomes one of the modern requirements. In particular, the improvement and enrichment of traditional education through computer-based learning systems naturally poses a number of challenges for professionals to develop new approaches and methodologies. The intensive developing needs of our society to integrate information technology into the learning process are used online, in the classroom and extracurricular activities in higher education , institutions with the use of e-books, virtual stands, Internet access. Training, as well as the implementation of consistent theoretical and practical measures related to the introduction of distance learning. The development of distance learning in Uzbekistan not only provides quality education to our people, but also allows them to take their place in the international market of educational services [4]. A number of activities for the organization and development of computer training are in progress. Civil society based on democratic state and market economy to improve human resources, capacity building of the country in the Decree of the President of the Republic of Uzbekistan dated May 30, 2002 "On measures for further development of computerization and introduction of information and communication technologies" has been identified as one of the essential conditions for the construction [7] .

Nowadays, the level of hardware and software is very high and it satisfies the work of all fields. Formation of the knowledge base in computer-based learning systems also promotes the development of automated learning-based systems to a higher level, namely the intellectual learning system. Associating a computer system with a linguistic discipline is very important. As you know, linguistics was formed in the 19th century as independent science. Since then, it has evolved in many aspects and directions. In particular, such subjects as sociology and linguistics, psycholinguistics (psychology and linguistics), ethnolinguistics (ethnography and linguistics), neurolinguistics (neurology and linguistics), mathematical linguistics and computer linguistics. This should be regarded as the integration of several disciplines into the system of science. Since the middle of the 20th century, the terms "machine translation" and "machine linguistics" have been used in linguistics. In parallel with this, the theory of formal grammar emerged, with a focus on modeling the language and its particular aspects. These aspects of

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language have been developed in mathematical linguistics, which has become the basis for the emergence of computer linguistics[2].

Thus, a new direction in linguistics - theoretical and practical areas of computer linguistics and linguistics have emerged. Mathematical linguistics was developed in the 1950s as a special area of linguistics. The ideas of Louis Elmslev, the founder of the Copenhagen School of Structural Linguistics (Glossematics), served as an impetus for the formation of this discipline. He even suggested the name of science that explains mathematical phenomena in language. According to the scientist, this subject was to be called "Linguistic Algebra" [3]. American linguist Noam Chomsky's point of views on formal grammar and transformative grammar have led directly to the emergence of mathematical linguistics as a particular focus. Under the influence of these views, the subject of mathematical linguistics developed. Mathematical linguistics is the science of mathematical development of natural languages, in particular, the creation of artificial algorithms. The most important issues facing mathematical linguistics are:
1. development of axiomatic theory of language;
2. formation of formal grammar;
3. development of mathematical models of languages.

The main purpose of mathematical linguistics is to develop a mathematical model of natural languages. To achieve this goal, science has the following objectives:
1. development of formal models of natural and artificial languages;
2. estimation of linguistic phenomena in mathematical parameters;
3. analysis of language phenomena using mathematical methods.

Computer linguistics is a logical continuation of mathematical linguistics, which is the most important part of applied linguistics, and computer linguistics began to take shape in the United States in 1954, during Georgetown University's first machine translation experience that it was acted as independent science.

Computer linguistics is the basis of the English word "computational linguistics". Until the 1980s, this discipline was called by different names, namely computational linguistics, mathematical linguistics.

The main objective of this discipline is to develop computer programs for linguistic problems, optimize human and machine (computer) communication, and process natural language. Natural language processing involves computer analysis and synthesis of natural languages in computer linguistics. In this case, analysis is used to understand the natural language of the computer using morphological, syntactic, and semantic analysis, while synthesis refers to the grammatical formation and generation of text on a computer [1].

The main areas of computer linguistics include:
1. development of automatic learning system;
2. knowledge validation;
3. automatic editing of texts in different ways;
4. creation of systems for automatic morphological, syntactic and semantic analysis of texts;
5. development of machine translation software;
6. statistical analysis of dictionaries and computer text;
7. creation of optimal programs for solving linguistic problems;
8. development of computer communication model;
9. Creation of hypertext technology of text structure and others.

Computer linguistics is practical, with a focus on the practicality of language problems. Computer linguistics relies more on artificial languages (programming languages, algorithmic languages), with the limited possibilities of natural languages being processed and adapted to the computer. To do this, we must remember the model. The model is a tool that can help us learn, understand, interpret and improve the system. The model can be a complete and exact object, or a characteristic of an object. The absolute model of an object is its own, and all other models are approximate models. The model is a logical means of predicting or comparing the results of a given action, showing the best of the possible action, and the most commonly used model are mathematical models. As a rule, computational experiments on a mathematical model are carried out when the actual object cannot be suppressed or economically feasible. It should be noted that the results of such computational experiments are far less accurate than the actual experiments on the real object. For instance , the effects of nuclear war on climate can only be

predicted by mathematical modeling and computer computing. The computer shows that the nuclear war cannot be won. Computer experiments show that there may be environmental changes caused by war, such as rapid temperature changes, atmospheric dust, glacial polar ice caps and even the Earth's own axis. In mathematical modeling, mathematical expressions of physical processes are modeled. A mathematical model is an approximate description of a class of phenomena represented by mathematical symbols of the outside world. A mathematical model is a powerful way of knowing the outside world, as well as predicting and managing it. Analyzing the mathematical model allows us to integrate the nature of the phenomenon under study. The mathematical modeling of events is carried out in four steps:

1. The first step is to formulate the laws that link the basic objects of the model.
2. The second step is to check the mathematical problems in the model.
3. The third step is to determine whether the model meets the accepted criteria of practice. In other words, to determine whether the object's results are consistent with theoretical results from the model.
4. The fourth step is to model the event by summarizing the event data, conducting next further analysis and looking through it.

Thus, the basic content of the model is based on experimental and theoretical analysis of the model based on the initial study of the object, comparing the results with the object information, modeling (improvement) and so on.

In order to develop a mathematical model, the problem is first formalized. Necessary characters are entered according to the content of the issue. Then a functional link between formulas and accounts is created.

Let's look at the aforementioned example.

Student's number is determined using a mathematical focus model. Let's make the case: X - is the number of dreaming of student , U - is the result of the calculation, N- is the date, M - is the year.

Thus ,the instructions of presenter :
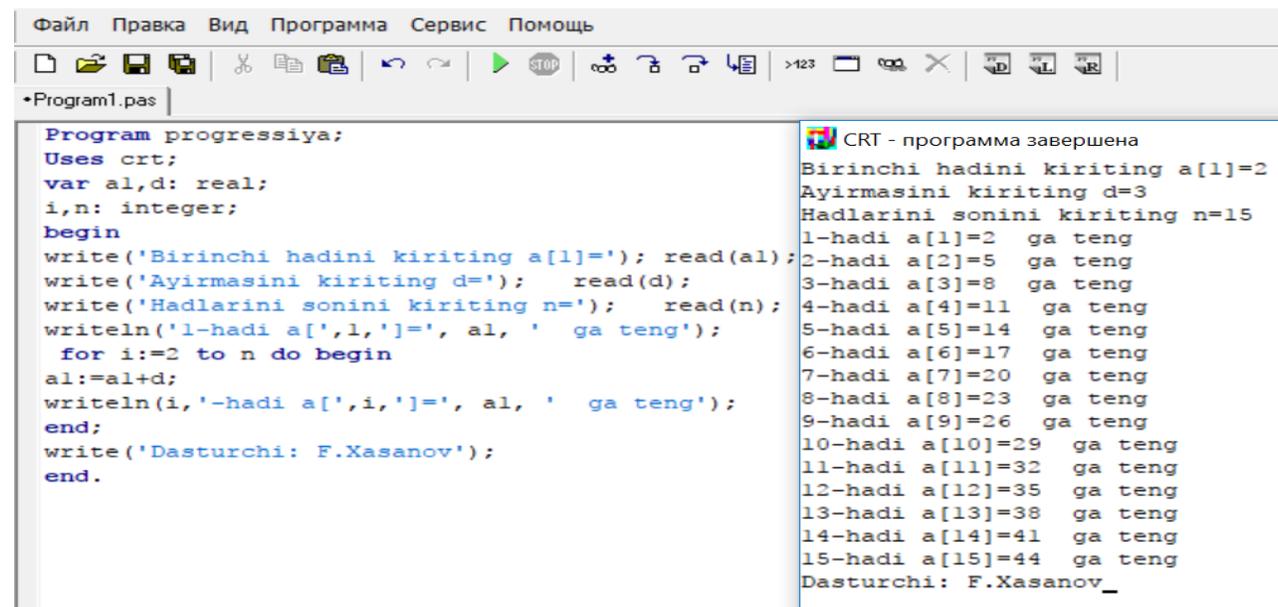$U=(X*5 + N)*2 + M$
is expressed by the formula.
This formula serves as a mathematical model of the problem (mathematical focus) and represents the linear equation for the variable X.
Let's solve the equation:
$X = (U - (M + 2N))/10$

This formula shows the estimated number algorithm.


```
Program progressiya;
Uses crt;
var al,d: real;
i,n: integer;
begin
write('Birinchi hadini kiriting a[1]='); read(al);
write('Ayirmasini kiriting d=');    read(d);
write('Hadlarini sonini kiriting n=');    read(n);
writeln('1-hadi a[',1,']=', al, '  ga teng');
 for i:=2 to n do begin
al:=al+d;
writeln(i,'-hadi a[',i,']=', al, '  ga teng');
end;
write('Dasturchi: F.Xasanov');
end.
```

```
CRT - программа завершена
Birinchi hadini kiriting a[1]=2
Ayirmasini kiriting d=3
Hadlarini sonini kiriting n=15
1-hadi a[1]=2   ga teng
2-hadi a[2]=5   ga teng
3-hadi a[3]=8   ga teng
4-hadi a[4]=11  ga teng
5-hadi a[5]=14  ga teng
6-hadi a[6]=17  ga teng
7-hadi a[7]=20  ga teng
8-hadi a[8]=23  ga teng
9-hadi a[9]=26  ga teng
10-hadi a[10]=29  ga teng
11-hadi a[11]=32  ga teng
12-hadi a[12]=35  ga teng
13-hadi a[13]=38  ga teng
14-hadi a[14]=41  ga teng
15-hadi a[15]=44  ga teng
Dasturchi: F.Xasanov_
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In the age of information technology in the 21st century, it is no secret that students have a great access to computers and the Internet. Therefore, when students pass lessons through information and communication technologies, students are more likely to be interested. Take, for instance, the Pascal programming environment, which subtracts the arithmetic progression or geoometric progression of a school math course.

This method of arithmetic progression increases the student's computer literacy and at the same time strengthens his mathematical knowledge. Generally, students will be interested in teaching math lessons using information and communication technology, slides and animations, and hypersensitivity [9].

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