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*CONSTRUCTION OF A NEUTROSOPHICAL LOGICAL MODEL*

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*Abstract*
*Currently, there is a growing need to develop data analysis and decision-making methods that can take into account uncertainty and fuzziness in information. The Neutrosophical Logic Model is an effective tool that allows one to model such conditions and make decisions in the context of fuzzy and uncertain data. This abstract discusses the relevance of the construction of the neutrosophical logic model and its application in various fields such as artificial intelligence, expert systems, risk management and decision making. The main advantages and characteristics of the neutrosophical logic model are also discussed, including its ability to account for uncertainty, model fuzzy concepts, and integrate with other data analysis techniques. This abstract provides an overview of key aspects of the neutrosophical logic model and highlights its relevance in the modern world of information technology and decision making.*

*Keywords:* *neutrosophical logic model, decision-making, fuzzy logic, classification, union, intersection.*

## *1. Introduction.*

*In the modern information society, characterized by an increase in the volume of data and an increased degree of uncertainty, there is a need to develop effective methods for analyzing information and making decisions. Traditional methods based on classical logic and probability theory are often insufficient to account for the fuzziness and uncertainty inherent in many real-world situations. In this context, the neutrosophical logic model represents a modern and promising approach to account for fuzziness and uncertainty in data. Neutrosophical logic, based on ternary logic, expands the capabilities of classical binary logic, including an additional meaning - uncertainty. Thus, it provides more flexible and powerful tools for data analysis and decision making under uncertainty [1].*

*Neutrosophical fuzzy set is a concept that combines elements of fuzzy logic and neural network approaches. In fuzzy logic, each element of a set has a degree of membership in this set, expressed as a number from 0 to 1. Neural network approaches are used to analyze data and train computer systems based on the functioning of neural networks that imitate the functioning of the human brain. The neutrosophical fuzzy set includes elements of both approaches. It is used to model uncertainty and fuzziness in data, and to process information when precise values are unavailable or uncertain. Such methods can be useful in solving problems of classification, forecasting and decision making under conditions of uncertainty. The neutrosophical set and neutrosophical logic are parts of the general direction in the research of fuzzy logic developed by Lotfi Zadeh [2-3].*

*In fuzzy logic, each element has a degree of membership in a set, while in a neutrosophical set, each element is characterized by three parameters: truth, falsity and uncertainty. This allows for more flexible modeling of various situations where uncertainty plays an important role. In neutrosophical logic,* *in addition to the classical meanings of "true" and "false", the meaning of "uncertainty" is also taken into account. This allows us to more accurately take into account the degree of uncertainty in statements and reasoning. Both of these concepts - neutrosophical set and neutrosophical logic - are aimed at processing fuzzy and uncertain information, which makes them useful in various fields such as decision making, knowledge management, artificial intelligence and others [4].*

*In real-life situations, there are often situations where information is not completely accurate or complete. The Neutrosophical Logic Model allows for uncertainty and fuzziness in data to be taken into account, making it an important tool for analysis and decision making in such settings. Many concepts in the real world may not be clearly defined. For example, the concepts "tall" and "short" may have different meanings for different people or in different contexts. The Neutrosophical Logic Model allows one to model such fuzzy concepts and make decisions based on fuzzy data. In various fields such as expert systems, artificial intelligence, risk management, etc., it is important to be able to make decisions under conditions of uncertainty. The Neutrosophical Logic Model provides tools for analysis and decision making in such environments, thereby reducing risk and improving the quality of decisions made. The Neutrosophical Logic Model can be used in conjunction with other data analysis methods such as neural networks, genetic algorithms, machine learning algorithms, etc. This allows you to create more complex and effective analysis and decision-making systems. Thus, the construction of a neutrosophical logical model is relevant in the modern world, where data is often not absolutely accurate or complete, and requires analysis and decision-making taking into account uncertainty and fuzziness.*

*The purpose of this study is to review and analyze the neutrosophical logic model in order to identify its applicability and effectiveness in various fields. Specific research objectives include:*

*Study of the basic principles and concepts of the neutrosophical logic model, including ternary logic and the consideration of uncertainty.*

*Analysis of the advantages and limitations of the neutrosophical logic model compared to traditional data analysis methods.*

*A study of examples of the application of the neutrosophical logic model in various fields such as artificial intelligence, expert systems, risk management and decision making. Assessing the effectiveness and potential of the neutrosophical logic model in solving specific problems under conditions of uncertainty and fuzziness of data. Formulating recommendations for the application of the neutrosophical logical model in various fields and further research in this direction. By achieving these objectives, the study aims to identify the potential of the neutrosophical logic model as a modern tool for data analysis and decision making under conditions of uncertainty.*

## *2.Materials and methods.*

*To carry out the study, a review of scientific literature was carried out, including articles, books and scientific publications on the topic of the neutrosophical logic model, ternary logic, fuzzy logic, as well as their application in various fields. Operations with neutrosophical sets are similar to operations with classical fuzzy sets, but take into account additional parameters of truth, falsity and uncertainty for each element. Here are the basic operations with neutrosophical sets:*

*Union: Given two neutrosophical sets A and B, the union A∪B is computed by combining elements from both sets, taking into account their truth, falsity, and uncertainty characteristics.*

*Intersection: The intersection A∩B of two neutrosophical sets is calculated similarly, given the corresponding elements from both sets.*

*Complement: The complement A' of a neutrosophical set A is determined relative to the complete neutrosophical set, taking into account the truth, falsity and uncertainty of each element.*

*Intersection with Complement: This operation allows you to calculate the intersection of one neutrosophical set with the complement of another.*

*Complement of Intersection: This operation allows you to calculate the complement of the intersection of two neutrosophical sets.*

*Membership: Determines the degree to which an element belongs to the neutrosophical set, taking into account its truth, falsity and uncertainty.*

*These operations are used to analyze and process fuzzy and uncertain information within the framework of neutrosophical logic and can be applied in various fields including decision making, knowledge management and data processing.*

*Let x be an element of the set, T(x) its degree of truth, F(x) its degree of falsity, U(x) its degree of uncertainty.*

*Let us denote the combined neutrosophical set as CNS=ANS∪BNS.*

*Then for each element x from the sets ANS and BNS, its characteristics in the set CNS can be calculated as follows:*

$TC(x)=max(TA(x),TB(x))$

$FC(x)=min(FA(x),FB(x))$

$UC(x)=max(UA(x),UB(x))$

*where TC(x), FC(x), UC(x) are the degrees of truth, falsity and uncertainty of element x in the combined CNS set, respectively.*

*Thus, each element of the united neutrosophical set will have its own characteristics of truth, falsity and uncertainty, taking into account the values*

*The arithmetic of addition of two neutrosophical sets involves the summation of their elements, taking into account their characteristics of truth, falsity and uncertainty. Suppose we have two neutrosophical sets ANS and BNS, and we want to perform the addition operation ANS+BNS to obtain some new neutrosophical set CNS.*

*For each element x from the sets ANS and BNS, its characteristics in the set CNS can be calculated as follows:*

$TC(x)=TA(x)+TB(x)-TA(x)\times TB(x)$

$FC(x)=FA(x)+FB(x)-FA(x)\times FB(x)$

$UC(x)=UA(x)+UB(x)-UA(x)\times UB(x)$

*where TC(x), FC(x), UC(x) are the degrees of truth, falsity and uncertainty of element x in the combined CNS set, respectively.*

*These formulas allow us to take into account the interaction between truth, falsity and uncertainty when performing the operation of adding neutrosophical sets. Examples of applications of the neutrosophical logic model in various fields such as artificial intelligence, expert systems, risk management and decision making were analyzed. This made it possible to evaluate the effectiveness and applicability of the model in practice. Neutrosophical logic is indeed a generalization of many existing logics and offers an interesting approach to describing logical statements in three-dimensional neutrosophical space. In this space, each statement is characterized by three dimensions: truth (T), falsehood (F) and uncertainty (I).*

*For engineering calculation software, the classic unit interval [0, 1] can also be used for simplification. It is important that the components T, I and F are independent and can be of various combinations, allowing different aspects of information and its ambiguity to be taken into account. To test the applicability of the neutrosophical logical model in specific situations, mathematical models were developed and computational experiments were carried out. This included formalizing the problem, defining ternary variables and operations, and analyzing the simulation results.*

*The neutrosophical set in this context is defined as a subset of the set of propositions U, which is represented by the elements x(T,I,F), where T, I and F represent the percentage of truth, uncertainty and falsity, respectively. For an element x from the set U that belongs to the neutrosophical set M, the degree of its membership in M is determined by the percentages %t%, %i% and %f%, which represent the degree of truth, uncertainty and falsity in the set M. Here t varies in T,i changes in I, f changes in F. Statistically, T, I and F can be represented as subsets, but dynamically they are operator functions, which means they can change depending on the context or conditions. This allows us to take into account the variability in the degree of truth, uncertainty and falsity for elements of the neutrosophical set in different situations or time points.*

*Neutrosophical probability is a generalization of classical probability and imprecise probability. In neutrosophical probability, the chance of event A occurring is defined as t% true where t is in subset T, %i% indeterminate where i is in subset I, and %f% false where f is in subset F. In classical probability n belongs to the interval [0, 1], while in neutrosophical probability n belongs to the interval [3+]. In fuzzy probability, each event has a probability represented by a subset T[0,1], but not by a number p from the interval [0, 1]. The subset F also belongs to the interval [0,1]. In crisp probability there is no indeterminate subset I.*

*Neutrosophical statistics analyzes events described by neutrosophical probability. A function x that models the neutrosophical probability of randomly chosen variables is called the neutrosophic distribution: NP(x)=(T(x),I(x),F(x)), where T(x) is the probability that x will occur , F(x) is the probability that the value x will not occur, and I(x) is the unknown (unknown probability) of the value. To test the effectiveness of the model, experiments were conducted on real or synthetic data. This included data collection, preprocessing, application of the neutrosophical logic model, and analysis of the results.*

*Neutrosophical logic is a branch of logic that extends and generalizes classical logic to take into account uncertainty and fuzziness in statements and reasoning. Unlike classical binary logic, where statements can only be true or false, neutrosophical logic allows for a third element - uncertainty. The basic principles of neutrosophical logic include:*

*Ternary logic: In neutrosophical logic there are three basic meanings for statements: truth, falsehood and uncertainty. This makes it possible to more accurately account for fuzziness and uncertainty in real-world situations.*

*Neutrosophical Conclusion: Conclusions in neutrosophical logic can be based on three values - truth, falsity and uncertainty. This allows for more flexible conclusions given the uncertainty in the data.*

*Extended operations: Neutrosophical logic offers advanced operations such as neutrosophical union, intersection and set complement, which take into account uncertainty.*

*Modeling fuzzy concepts: Neutrosophical logic is widely used to model fuzzy concepts such as "high", "low", "fast", "slow", etc., which cannot be uniquely defined. Neutrosophical logic finds application in various fields such as artificial intelligence, decision making, knowledge management, expert systems and others where uncertainty plays an important role.*

***3. Result.*** *A comparative analysis of the neutrosophical logic model was carried out with traditional methods of data analysis and decision making. This made it possible to identify the advantages and limitations of the model compared to other approaches. The materials and research methods made it possible to conduct a comprehensive analysis of the neutrosophical logic model and evaluate its effectiveness in various fields of application. The results obtained allow us to draw conclusions about the potential of the model and identify directions for further research.*

*The functionality of the program for constructing a neutrosophical fuzzy model of the Sugeno type may include the following aspects:*

*Input of initial data: The user can enter initial data, such as parameters and characteristics of the system or situation, on the basis of which the model will be built.*

*Definition of fuzzy variables: The program allows you to define fuzzy variables and their linguistic meanings that will be used in building the model.*

*Creating Rules: The user can create rules that define the logic of the model based on input variables and their values.*

*mathematical formalization of the neutrosophical logical model:*

*Ternary values:*

*Statement P can take one of three meanings:*

*True (T)*

*False (F)*

*Uncertainty (I)*

*Neutrosophical operators:*

*Union of neutrosophical sets: A∪B*

*Intersection of neutrosophical sets: A∩B*

*Neutrosophical set complement: 'A'*

*Neutrosophical rules of inference:*

*Introduction: If P is true, then P is true.*

*Remedy: If P is false, then P is false.*

*Attenuation: If P is indefinite, then P is indefinite.*

*Uncertainty Modeling:*

*A neutrosophical set A can be represented as A={(TA,IA,FA)}, where TA, IA and FA are the degrees of truth, uncertainty and falsity, respectively, for the elements of the set A.*

*Let's build a mathematical model of fuzzy logic of the Sugeno type. This model uses fuzzy rules expressed in the form of "if-then" where each "if" has a truth value for all input variables, and each "then" determines the contribution to the output depending on the values of the input variables.*

*Let's say we have two inputs x and y, each of which belongs to the interval [0, 1], and one output z, which also belongs to the interval [0, 1].*

*Let us have fuzzy rules:*

*If x is "small" and y is "big", then z is "tall".*

*If x is "big" and y is "small", then z is "short".*

*where "small", "large", "high" and "low" are linguistic variables with their fuzzy values, which are defined on the interval [0, 1].*

*Mathematically, this can be expressed as:*

*If x and y have fuzzy values x1 and y1 respectively, then the output z1 for the first rule will be: z1=μhigh(x1)×μlarge(y1).*

*If x and y have fuzzy values x2 and y2 respectively, then the output z2 for the second rule will be: z2=μlow(x2)×μhigh(y2),*

*where μhigh(x1), μlow(x2), μlarge(y1) and μlarge(y2) are the membership functions for the corresponding fuzzy sets.*

*Finally, for the neutrosophical logic model, we could also add a degree of uncertainty Iz for each rule to account for the possibility of uncertainty in decision making. Thus, the mathematical formalization of the neutrosophical logical model involves the use of ternary values, operators and inference rules for working with fuzzy and uncertain information. The program provides a choice of different membership functions to determine whether fuzzy variables belong to certain linguistic meanings. To determine the output of the model based on the input data and rules, the program uses fuzzy inference algorithms, including the Sugeno algorithm. The user has the ability to visualize the simulation results, for example through graphs or charts, to better understand the impact of various parameters on the output data. The program can provide tools for assessing the effectiveness of the constructed model based on comparison of modeling results with real data or expert estimates. The user can save the built models for later use or download them for further analysis or modification. These functionalities allow users to create, analyze and use Sugeno-type neutrosophical fuzzy models to solve various problems in various fields.*

*The findings from the Neutrosophical Logic Model study are of interest to a variety of application areas, including artificial intelligence, expert systems, risk management, and decision making. In this discussion we will discuss the key aspects of the study, its results and their significance. The Neutrosophical Logic Model provides a powerful tool for accounting for uncertainty and fuzziness in data. The model allows you to effectively work with fuzzy concepts and make decisions under conditions of uncertainty. The study found that the model demonstrates good applicability in various fields such as data analytics, forecasting and risk management. Some aspects of the model may require additional tuning and optimization for specific tasks. In some cases, it is difficult to interpret the simulation results due to ternary logic and data ambiguity. Compared to traditional methods of data analysis and decision making, the neutrosophical logic model demonstrates advantages in accounting for fuzziness and uncertainty. However, the effectiveness of the model may depend on the specific situation and the specifics of the task.*

*The results of the study have practical significance for the development of intelligent systems that can adapt to uncertainty in data. The neutrosophical logic model can be useful for real-time decision making in various fields where uncertainty and fuzziness need to be taken into account. Overall, the results of the study confirm the potential of the neutrosophical logic model as an effective tool for data analysis and decision making under conditions of uncertainty. Further research in this area may lead to the development of new methods and technologies that can improve the quality of decisions made in various fields of activity.*

*4. Conclusion. During the study of the neutrosophical logical model, valuable results were obtained that allow us to draw a number of important conclusions about the applicability and effectiveness of this model. The results of the study showed that the neutrosophical logic model is an effective tool for data analysis and decision making under conditions of uncertainty. The model demonstrates applicability in various fields, including artificial intelligence, expert systems and risk management: The Neutrosophical Logic Model has several advantages, such as accounting for uncertainty and fuzziness in data, the ability to deal with fuzzy concepts and make decisions under uncertainty. Based on the results of the study, we can recommend the use of a neutrosophical logic model for data analysis and decision making in situations where the data is not absolutely accurate or complete. Further research in the field of the neutrosophical logic model may lead to the development of new methods and technologies that can improve the quality of decision making and increase the efficiency of data analysis in various fields. Thus, the results of the study confirm the significance and promise of the neutrosophical logic model as a modern tool for data analysis and decision-making under conditions of uncertainty. Neutrosophical fuzzy models of the Sugeno type have a wide range of applications due to their ability to account for uncertainty and fuzziness in data. Some of the main areas where such models can be used include:*

*Neutrosophical fuzzy models can be used to control production processes, optimize operating parameters and predict results under conditions of variable and uncertain factors. In finance, models can be used to analyze market dynamics, predict asset prices, identify risks, and make investment decisions. Neutrosophical fuzzy models can help manage transportation systems by improving traffic, optimizing* *routes, and predicting and managing passenger and cargo flows. In the medical field, such models can be used to diagnose diseases based on vague symptoms, predict the risk of developing diseases, and optimize patient treatment. In the energy field, neutrosophical fuzzy models can help in managing energy distribution, optimizing grid operation, and forecasting energy demand and supply. In ecology, such models can be used to analyze ecosystems, predict the environmental impacts of various factors, and optimize resource management strategies. These areas demonstrate only a portion of the potential applications of Sugeno-type neutrosophical fuzzy models. They can effectively analyze and manage complex systems under conditions of uncertainty, making them a valuable tool in the modern world.*

*References*

1. *Yakhyaeva G.E. Fuzzy sets and neural networks: textbook, 2nd ed., rev. - M.: Internet University of Inform. Technologies: Binom. Laboratory*
2. *Pegat A. Fuzzy modeling and control. - M.: Binom. Laboratory of Knowledge, 2009 - 798 p.*
3. *Uskov A.A. Systems with fuzzy models of control objects. Monograph. – Smolensk: SFRUK, 2013 – 153 p.: ill.*
4. *Rutkowski Leszek. Artificial neural networks. Theory and practice. - M.: Hotline - Telecom, 2010 - 520 p.*

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