BioTechnology

An Indian Journal

FULL PAPER

About the probabilistic logic how to play the role of the knowledge progress

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ABSTRACT

Probabilistic logic is to use mainly the mathematical logic and the probability theory for the formal studying or quantitative research of inductive logic or inductive method. In the broadest sense the knowledge progress is the birth of new knowledge. Information Logic is a new knowledge that is a knowledge progress combined with the conditions of modern inductive logic and Information science. Today in human having has entered the information age the basic idea and basic methods of the probabilistic logic cannot be underestimated to have important role in science and society, for example, the probability logic can help people to deal with the complex data and information as soon as possible, to make timely and effective judgment and decision-making. In addition, the probability logic conducive to enriching people's social knowledge, and improve people's concept of science and scientific method.

KEYWORDS

Probability; Probabilistic logic; Logic; Knowledge; Knowledge progress.

INTRODUCTION

Probabilistic logic is a type of modern inductive logic. It is characterized by the use of modern logic and mathematical tools which are mainly the application of mathematical logic and the theory of probability inductive logic, with inductive method for formal, quantitative study. Aristotle discusses the problem of induction was made similar to the frequency interpretation of probability thought. G.W. Leibniz approximately characterizes the properties of probability which is (0,1,1/2)in three values and will be made as a branch of probability logic. J.S Muller in "logic system" and G.Boolean in "The laws of thought" in their books with a length about induction and the relationship between the probability. So inductive research in metric is associated with the probability. Probability logic is essentially deduction of inductive logic. From 1950s later, probability logic in modern mathematics and mathematical logic under the influence made much progress, growing with the combination of modern science and technology to make a lot of new breakthrough.

The concept of knowledge progress was started by Edward Denison (1915-), "knowledge progress" means that in the production mainly depends on the knowledge resources to organize production, improves productivity, produces the knowledge product, provides knowledge service, achieves the purpose of rapid economic growth form knowledge industry. Knowledge progress of this paper is a more generalized dimension of understanding: new accumulation, new development, new system of human knowledge, as long as there are different from the old knowledge of all new knowledge are advances in knowledge of the extension, or the past never existed knowledge is knowledge progress. Therefore, the so-called knowledge is the birth of new knowledge.

INDUCTIVE LOGIC AND INFORMATION SCIENCE COMBINED WITH ADVANCES IN KNOWLEDGE: INFORMATION LOGIC

On one hand, modern probability logic is in many human fields of knowledge progress under the premise of implementation. On the other hand, the rapid development of modern probability logic also promote contemporary logic of knowledge progress, for the logic of contemporary development and the future development direction --cognitive application. Contemporary probability logic is the rise of modern science, which is modern deductive logic, the development of modern inductive logic. The rise reason of contemporary probability logic roughly are: the development of modern science, more complete probability theory, inductive logic itself requires further refinement and precise, the rationality of the inductive method the exploration of the problem[1].

Since 1950s, contemporary science and technology rapidly developed. Not only the traditional disciplines such as mathematics, physics, chemistry, biology, engineering and technology of rapid development, but also a new subject soon was born. With rapid development of modern information science and technology, for example, was born in development, completely changed the world, changed all human ideas and traditions, especially computer science and technology as well as the interdisciplinary development trend and made our world into the computer world, entered the network era and entered the network society which is information society. In this case, for the study of human thought of basic mode and the basic rules for the purpose of logic are bound to be affected and to respond. Thus, in contemporary science and technology development and promotion, modern inductive logic are some new trends and characteristics:

One is cognitive turn of the inductive logic. Human cognition deepen increasingly give birth to cognitive science. Research in cognitive science is not only a theoretical innovation, but also is the method choice. Indeed, cognitive science show the method has been driving many disciplines of knowledge accumulation and knowledge progress[2]. In the cognitive value of guidance and cognitive science methodology guide, inductive logic has been completed from the qualitative and quantitative cognition and transform the insufficient cognition to complex cognitive. However, the cognitive value is always a constant orientation of inductive logic. Classical inductive logic in the logic method to promote people's awareness of responsibility, while the modern inductive logic is more directly at the beginning to establish quantitative cognitive need meet the perfect system. The insufficient cognition and complex cognitive logic research is not only the human need for cognition in-depth development and is the inevitable development direction of inductive logic. In conclusion, not only in the cognitive logic call go further, but also for the inductive logic, the further development of the power and direction may be cognitive[3].

Two is subject turn of inductive logic. On the other development of science and technology and influence of Inductive logic combine subjective factors with objective factors and pure logic combine with other disciplines, so the formation of a new cross discipline. Such as psychology and sociology cross formed by combining "social cognition", the subject is neither completely belongs to psychology and sociology, also not entirely belong to the logic and knowledge science. As another example, the inductive logic and thinking science link to the study of information science research. In fact, information theory of C.E.Shannon(1916-2001) includes logic is used for information statistical thinking. Rudolf Carnap(1891-1970) developed this idea, after Jaakko Hintikka(1929-) research advance, based on the formation of epistemic logic" information logic". Surely,"information logical" in different disciplines of discourse is a relatively broad and not unified concept. For example, Professor Johan van Benthem(1949-) thought information logic is the information flow of logic. Generally speaking, the so-called information logic is to reveal the logic and information science academic and technology association. With the development of computer science and artificial intelligence research, inductive logic research value is taken seriously increasingly. If the inductive logic and artificial intelligence of other contemporary cognitive science technology together, bound to human cognitive ideas and methods to bring new progress and breakthrough.

Therefore, from a point of view, modern inductive logic may be moving towards a very important direction of development——information logic.

The thought support of information logic is based on information flow of information philosophy and the pivot is based on data analysis method of data mining, whether for logic or for information science, information logic is a new knowledge and is the updating of knowledge. Therefore, information logic is inductive logic and information science to combine with a knowledge progress.

PROBABILISTIC LOGIC AND DATA PROCESSING

Today's society is toward information society which is being formed. The informatization society is that the society has not only the traditional society and the basic elements——human and materials, but there is a more important factor-information[4]. Information can eliminate people to the understanding of uncertainty, can enhance people to obtain quantitative knowledge ability. In the information society, people better understand the world and must learn to effectively deal with all kinds of information, especially the rapid processing of various digital information. Probability logic to the real world of objective data and events of random phenomenon as the main research object, based on the data collection, induction, description and analysis. The possibility and direction of incident is described and strive to help people make a reasonable inference and prediction. Probability logic of this unique way of thinking is bound to become the awareness, understanding of random phenomena and information society of the tool. Probabilistic logic will become more and more prominent in the modern information society value, manifested in the following two aspects: one is the use of probabilistic logic can be rational and orderly processing complex information data. As the foundation of the modern information society in information and technology, the network provides a large number of complex chaotic information, but also makes people face more opportunities and choices and needs a lot of uncertain circumstances to base on massive data and information as soon as possible, makes reasonable and effective decision making. This is very not easy thing. The information and data of correct processing became the people to make scientific judgment prerequisites. Data processing is the basic method of statistics. Statistics of the general steps are: to put forward some valuable problems, defining the subject of investigation, data collection, collation of data (statistical graphs, statistics), data analysis, and inference. but" data analysis" can use probability logic. Because probabilistic logic thought and method is: make statistics as a quantitative analysis mathematics. In contemporary scientific exploration of the law in the process, people often actively attempt to various assumptions of programme, using statistical methods and quantitative characteristics calculation analysis of things, using statistical methods to find the best solution to solve the problem and gradually developed a talk by data of consciousness. People not only use the logic method to process information, but also pay attention to the active use of statistical inference method to processing of information, according to the number of samples to make a scientific inference of general characteristics. This processing method has been in the people's daily life and its economic, social activities in the area gradually show special and important value. Two is the probability logic method of information processing is the most frequently used method. It is widely used to be built in probability theory, based on the theory of mathematical statistics, focusing on the application of random phenomenon of the law itself to consider data collection, collation and analysis, which is different from the general statistics. Probability logic method of processing data is subjected to stochastic data, if no random interference, also do not need to use a statistical method to handle. On the other hand, probability logic method to deal with the problem in general is not very clear mechanism of complex problems, and is used to solve the problem of deterministic mathematical form. Used a deterministic mathematical form described in some phenomenon, if in order to get more accurate description, requires the use of probability theory and mathematical statistics method. Because of this, probability logic method has its unique application value. In the increasingly high degree of information technology in modern society master the mathematical methods of statistical inference, will help to improve people 's ability to deal with all kinds of information[5].

PROBABILISTIC LOGIC AND SOCIAL KNOWLEDGE

The nature and the human society in various phenomena of the myriads of changes and complex can be roughly divided into the inevitable phenomenon and random phenomena in two categories. Inevitable phenomenon results of certain conditions are determined, also are known as deterministic phenomenon. Random phenomenon under certain conditions the result is uncertain. Random phenomenon is accidental phenomenon. The world is inevitable, is also a chance. The world there are many inevitable phenomenon and there are countless random phenomenon.

Probability logic is a key of the awareness and understanding of random phenomenon, through the collection, collation and analysis of data and make the choice and judgment to be a technology. Master of the probabilistic logic method, it can make people at work and in life make fewer mistakes and gain the initiative. Therefore, from the point of view of modern life, probability logic is a branch of technology which can make people smarter. The famous mathematician Laplace(1749-1827) once said:" the most important thing in life and most of them substantially is only problems of probability[6]." And even some people say that probability theory is" real life guide, if not on the probability of an estimate, we can hardly move a step, attempt nothing and accomplish nothing[7]."

The concept of probability and our daily life are closely related, because the probability theory comes from people's social practice activities, but everywhere in life events of "may" "maybe" need probability method is used to infer the estimation. Probability method can allocate the surface of heavy fog, reveal things inherent quantitative characteristics, make

us more sensible to deal with life. The real world almost look all is uncertain events from the stability and instability and economic growth and decay to the human illness and death and the vicissitudes of the weather, without not containing random uncertainty. People try to make every attempt by the known conditions, to will be possible to infer and quantitative measurement. Probability theory is of some event or outcome were inferred from the tool. [8]

Daily life has a lot of things and phenomena can be used to explain the knowledge of probability. For example, experienced drivers are often able to quickly get from point A to point B, depend on the condition of his brain is stored inside the various sections in various traffic status probability and statistics data, and then choose the traffic jam probability frequency and a smaller road.[9] Probability from one perspective points out the development direction of the possibility of things, therefore, in social life of many competition mechanisms can be explained by chance the fairness and rationality. [10]

PROBABILISTIC LOGIC AND SCIENTIFIC KNOWLEDGE INCREASE

Probability logic contains a wealth of scientific thought and method. Learning and application of probability logic is beneficial to improve the scientific knowledge:

One is a random knowledge. Probability theory in nature and there are a lot of random phenomenon as the research object and its most important idea is how to recognize the hidden in stochastic phenomenon statistical regularity of random phenomenon, emphasize individual observation of contingency and observation of statistical regularity between contact. Random phenomenon has its accidental side, also have its inevitability side. This kind of inevitability as demonstrated by the large number of repeat experiment or observation shows the inherent laws, are called the stochastic phenomenon statistical rule. Random phenomenon is characterized by: the individual test was accidental and a large number of experiments show regularity. Engels pointed out:" on the surface of the role of chance, it is always affected by the internal hidden law." But our problem is to discover these rule. Probability logic study is designed in the contingency in search of inevitability, from chaos to find order, and discipline itself reflects the contingency and inevitability of the dialectical relationship. Visibly, thinking method of probability logic mastered can make people establish a random idea, from chance to find the law, so as to correctly understand the existence of a large number of random phenomena in nature.

Two is the mathematical knowledge. The ideas and methods of contemporary mathematics embodied in the axiomatic, deductive, model of the characteristics of probability logic, and fully embodies these characteristics. Probability logic use modern logic and mathematics as the tool, especially the application of mathematical logic and probability theory as the tool, to the inductive logic and method for formal, quantitative study. From a point of view can be said, probability logic is a formal, quantitative inductive logic. Probability logic have different systems, but most of them have some common features in the structure. It usually the first to give a probability calculus axiom system, and then on the form of the definition of probability system are similar to form the system gives the semantic interpretation. Furthermore, the inductive reasoning to be treated, which used in the calculus of probability is the main tool of Bayes theorem and Bernoulli theorem. [11]

Three is the statistical knowledge. Probability and statistics is linked together, and probability logics also closely linked with statistical inference. The statistical inference is an important method of thinking in mathematical statistics. it differs in mathematics, logical reasoning, is a property of probability reasoning method on the basis that the "small probability event principle". For example, hypothesis testing method of solving the problem of statistical inference is thought to reflect. For a given a small probability level standard, through to the sample data collection and calculation, if the results make a small probability events (the small probability event principle of contradiction) have rejected the original hypothetical inference; otherwise, the original hypothesis is acceptable or compatible. Similarly, interval estimation, variance analysis, regression analysis and other methods are also reflects the statistical inference theory. [12]

Four is the rational knowledge. Science is rational, but not irrational, emotional. Probability logic is logic. Logic features from people can effectively judge the" what is rational thinking"," what is the logical thinking". In a word, the logic is the most rational science. UNESCO identified logic as human knowledge foundation discipline, also is containing the view. Probability logic is the combination of modern logic and modern mathematics, which contains the unique and innovative way of thinking. Not only is the problem analysis and the powerful ideological weapon but also help to cultivate people's concept of science and the scientific attitude. [13]

CONCLUSION

Probability concept and probability logic of the birth and development of the contemporary human knowledge is a remarkable progress in the system. The progress of human knowledge in every stage, there are a lot of driving force and source of policy. Without a doubt, in the massive contemporary data of the network era and the information society, probability logic is a significant application value of technology and method. Probabilistic logic is in people's social life or in the practice of science, production labor, having great scientific and value guidance function. Probability logic will also play a more important role in guiding the progress of human knowledge.

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