Evolutionary Game and Computer Data Optimization Control for Multi-Valued Logical Dynamic Systems

Fanqiang Fu

1Zunyi Vocational and Technical College, Zuiyi, China

*Corresponding author e-mail: fufqiang2020@zyzy.edu.cn

Abstract. Evolutionary game theory specifically refers to the fact that today we no longer regard the traditional human model as a super rational player, but ascribe the outcome of human beings reaching the game balance to the fact that human beings seek the right method from the wrong through continuous trial and error. In the traditional control theory and the modern control theory, it is very difficult to establish the model for some systems which are described and summarized by the laws of physics or mathematics, and which have many influencing factors and are coupled with each other. With the continuous progress of science and technology, the application of computer data control system in many fields is more and more extensive, and based on the continuous advancement of modernization, the dependence on computer data control system is also constantly improving. Optimizing the computer data control system can not only greatly save time, but also improve the working efficiency of the group, thus increasing the benefits of the enterprise. In this paper, from the optimization control of computer data system as the analysis goal, through the study of evolutionary game theory and the analysis of multi-valued logic dynamic system, and then combined with the optimization control of computer data, this problem is discussed and analyzed from multiple aspects.

Keywords: Evolutionary Game Theory, Multi-valued Logical Dynamic System, Computer Data Optimization Control

1. Evolutionary game theory

Evolutionary game theory specifically refers to the fact that today we no longer regard traditional human models as super-rational players, but conclude that the outcome of human beings reaching game equilibrium is that human beings seek the right approach from the wrong through constant trial and error. This method is similar to the theory of evolution. Both methods are based on continuous trial...
and error, and the correct path is summed up from the mistakes, so as to finally reach the game balance.

In the traditional game theory, people are usually regarded as the state of extreme reason, and human beings play games under the condition that information is fully known. But from the perspective of reality, this hypothetical theory is not correct, human beings in reality is unable to achieve complete rationality and information familiar. In reality, when the two parties cooperate, first of all, the information obtained by the two parties is different, that is, the information is incomplete, and neither party is in a state of extreme rationality [1-3]. Therefore, under the influence of the overall environment, both parties in the game are in a state of limited rationality.

Evolutionary game theory differs from traditional game theory in that it is based on the premise that human beings are rationalized in desire and can only reach it in a limited way. In the game between the two parties, there are two main reasons affecting the two parties. First, human beings are limited in perception and cognition, including a series of processes such as information acquisition, analysis, tracing and use, which are unable to be completely accurate. Second, bounded rationality is derived from the degree of language limitation of the players. Since human beings cannot fully communicate their feelings and thoughts to each other, the language limitation will prevent the expression of the players from being at the same level. So it's impossible to be completely rational.

2. Multi-valued logical dynamic systems

In the traditional control theory and the modern control theory, it is very difficult to establish the model for some systems which are described and summarized by the laws of physics or mathematics, and which have many influencing factors and are coupled with each other. In addition, some models cannot be established due to the lack of effective testing or effective testing means in the actual application process. Therefore, both traditional control theory and modern control theory cannot be used in these cases [4]. However, in the real operation, there will be such a situation that the model which cannot be controlled by the traditional theory can achieve the expected goal and produce the ideal result under the operation of the experienced experimenter. Therefore, it is worth thinking deeply about the role of human in the control process.

2.1. Characteristics of the human mind in control

In order to more clearly explore the way human thought is used in the control system, we take the batching system as an example to illustrate the correlation between human subjective thought and system control.

Through in-depth observation of researchers, we can find that people's controlling behaviors mainly have the following three characteristics in the process of researchers' work :(Figure 1)
Figure 1. Characteristics of human control behavior

1) Active open-loop system
2) Strongly time-varying system
3) Have some experience in the characteristics of the system

First of all, the researcher uses active open-loop control during the operation. This feature is that, in the process of the researcher's operation, if the error value is within the allowable range, the researcher will not carry out redundant operations, which is an open-loop process. Once the weighing value is lower than a certain limit value, it is necessary to continue feeding, then the role of active control is reflected. In general, the researcher does not need to carry out active control in the early stage of the operation, and lets the feeding system work by itself [5-7]. The researcher will not intervene until a certain value is nearly reached. The weighing process is a kind of strong time-varying control. Its essence is that the active control effect changes suddenly at a certain time. The time-varying method of adjusting control is equivalent to directly controlling the input energy.

Second, richness from the experience of the operator in the effect of the practice, two operation experience of different people, in the actual operation, the different point is that experienced researchers in during operation to ensure that the fluctuations in the process of change is very small, and the inexperienced researchers are trying to control the fluctuation change within the error range.

Based on the above analysis, we can get, in imitation of human control, the system itself is in a time-varying of open loop control, but because of human intervention, at the time of need, human can join mandatory constraint, namely for closed-loop feedback correction, and in the process can be appropriate of the reference model of controlled object.

2.2. Multi-valued logic control principle

Logic controller is a kind of intelligent controller in essence, and its theoretical basis is pan-boolean algebra [8]. The control based on Pan-Boolean algebra is mainly derived from fuzzy control, which can describe the logical relationship of the system through human control experience and human unique thinking understanding. This mode of control thinking is widely used in all aspects.
Compared with the traditional control mode, the factors and state variables that affect the system are generalized, and the period can have multiple variables and state number at the same time. It does not output the mathematical model of the control object, but adjusts the controller according to the running state of the system so as to achieve the ideal output. This control mode, which simulates human beings, can not only simplify the control rules, but also greatly improve the effect of control output. After adopting the idea of fuzzy control, the trajectory of the controlled object in the process of running can be analyzed, and then the ideal control effect can be achieved by adjusting the size of the proportion.

3. Computer data optimization control

With the continuous progress of science and technology, the application of computer data control system in many fields is more and more extensive, and based on the continuous advancement of modernization, the dependence on computer data control system is also constantly improving [9]. Optimizing the computer data control system can not only greatly save time, but also improve the working efficiency of the group, thus increasing the benefits of the enterprise. Therefore, it is very important to optimize the control of computer data.

In the process of computer control, a single computer instruction can control several computer parts at the same time, inverse deduction, that is to say, computer parts are generally controlled by several computer instructions. Therefore, there will be some problems here. One is to optimize the computer instructions so as to control the most computer components with the least instructions; the other is to select the most concise and direct instructions to control the computer within the scope of an instruction. (figure 2)

![Figure 2. Optimized control of computer data](image)

3.1. Optimize computer command control

The instructions of the computer are generally planned and implemented according to the specific thoughts of human beings, and they want to clearly express the thoughts of human beings, and send them to the computer in the form of computer instructions, so that the computer can give an idealized feedback. For example, in reality, if we want to query some information, then the simplest way is to input the key characters in our thoughts in the search engine, so that the computer through the processing of the key character instructions, so as to feedback the output results we want. This mode is a relatively simple instruction input, if we want to put more in-depth ideas in the form of computer instructions into the calculation, then this mode is obviously not desirable [10]. Therefore, it is necessary to optimize the control of the computer instructions, so that the computer instructions can clearly express our core ideas, so as to give feedback to the instructions, and finally get our ideal
output results.

3.2. Simplification of computer instructions

Similarly, here we give examples to illustrate and analyze this problem. If we need to shut down the computer operation, under normal circumstances we have many instructions to complete this operation, for example, we can by clicking on the power supply shutdown button to complete this operation, also can be finished through the way of code to run shutdown operation, even we can through the top of the host computer to open the key to complete this operation. In this, we have diversified operations, but also brought some troubles. There are many instructions in the operation of shutdown alone. So can we simplify the instructions so as to complete the specific operation? In this process, we have computer input instruction is in order to complete this operation we need to turn it off, and the diversification of instruction can cause our this operation could not be the most direct and effective control, so we can effectively improve the computer instruction for simplicity to improve recognition degree of computer for us to issue instructions, fast and efficient output feedback result thereby.

4. Conclusion

Computer data optimization control in the current view, is extremely important, it is not only related to the development of the future of the computer, but also related to our daily production and life in the actual problems. For the control of computers, human beings have made great progress, but compared with our own, the control of computers is far from meeting the development needs of society. Therefore, how to optimize the control of the computer data system is an important challenge that we are facing at present. In this paper, from the optimization control of computer data system as the analysis goal, through the study of evolutionary game theory and the analysis of multi-valued logic dynamic system, and then combined with the optimization control of computer data, this problem is discussed and analyzed from multiple aspects.

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