Scholar Publishing Group
Nature Environmental Protection
https://doi.org/10.38007/NEP.2020.010202
ISSN 2790-2684 Vol. 1, Issue 2: 9-16

Construction of Natural Environment Protection System Based on Human-computer Interaction Intelligent System

Eric Jobiliong*

Department of Geographical and Historical Studies, University of Eastern Finland, 80130 Joensuu, Finland

**corresponding author*

Keywords: Natural Environment Protection, Human Computer Interaction, Intelligent System, Pollution Index

Abstract: With the continuous development of science and technology, the contradiction between man and nature is intensifying, and protecting the natural environment has become an inevitable trend of social development. In the process of protecting the natural environment, we should pay attention to the interaction between nature and human beings, and respect nature while developing and innovating natural science and technology. Therefore, this paper proposes a construction method of natural environment protection system based on human-computer interaction intelligent system. This method is not only applicable to scientific and technological research, but also an effective method in environmental protection research. We also studied the natural scenic spots. The experimental results show that the four pollutant loads of COD, NH3-N, TN and TP are 29.97 t, 4.67 t, 5.81 t and 0.68 t respectively. In this paper, we must take some measures to prevent the expansion of pollution. For example, we should try to reduce the use of resources in the production process. If we find that some resources cannot be used after people produce them, It is the best way to throw it away in time and use it or recycle it.

1. Introduction

China is a country with large population and large resources, so environmental protection is an important issue that people are facing. When the total population of China has reached a very large level, people should pay attention to environmental protection, because people are a member of the society, and inevitably produce some pollution in the process of survival. But today, these pollution problems can not be controlled and solved by people, because it is difficult for people to fundamentally control.

With the increasingly serious environmental problems in the world, countries are constantly improving their environmental science and technology level and environmental governance capacity, and actively exploring effective ways to solve environmental problems. Ruihua collected the factors

influencing the environmental protection behavior of community residents and the environmental improvement intervention strategies from top journals by using the literature method [1]. In order to improve the effect of rural financial ecological environment evaluation, Wen Wei combines machine learning with improved neural network algorithm to build a rural financial ecological environment evaluation system [2]. Bokolo Anthony Jr has developed a green information system (IS) interpretation model based on the technology organization environment (TOE) framework to determine the factors that affect the refraction of the green information system, and further studied the extent to which these factors affect the green information refraction of ICT based enterprises to reflect the ecological responsibility of enterprises [3]. According to the above analysis, it has become an important issue to establish a harmonious mode of harmonious coexistence between man and nature.

As a member of nature, human beings should actively participate in the protection of the natural environment and make their own contributions to improving the environment. In the process of environmental protection, if we can't interact well with ourselves, there will be some phenomena such as climate warming, and human activities will also cause damage to the natural environment.

2. Construction of Natural Environment Protection System Based on Human-Computer Interaction Intelligent System

China has a vast territory, complex terrain, and different natural environments, so more scientific and effective measures need to be taken. At present, China has made relevant regulations on environmental protection, which is one of the basic concepts that people must abide by and implement. At the same time, we need to pay more attention to environmental protection after the development of environmental protection. Only in this way can we ensure China's continuous development and progress, and provide a more healthy and powerful guarantee for human society [4].

2.1. Summary of Domestic and Foreign Environmental Protection Research Achievements

In the construction of ecological civilization, China actively advocates harmonious coexistence, the development mode of ecological economy, constantly improves the ability to protect the ecological environment, and constantly strengthens the monitoring of the ecological environment. In recent years, more and more scholars focus on how to establish a good ecological environment mechanism [5-6] in the continuous exploration of new economic models and sustainable development theory. In recent years, with the increasing attention and research on environmental issues by experts and scholars in relevant fields at home and abroad, environmental protection experts at home and abroad have also included the construction of ecological civilization in the analysis and research of environmental impact factors. At the same time, experts and scholars in these fields also actively explored a set of reasonable and effective ways and means of ecological economic development. According to the analysis and research results of the influencing factors of environmental problems, the domestic and foreign environmental protection models can be divided into four types: one is to study the generation mechanism of environmental problems through the sustainable development model; The second is through the study of ecosystem and economic system; The third is to study the relationship between environmental effects and pollution control measures; The fourth is through environmental standards and technical means [7-8].

2.2. Problems Found

Human computer interaction intelligence for intelligent analysis and intelligent decision-making

of natural environment protection system has become an indispensable means to achieve harmonious coexistence between human and nature and promote sustainable development in the future [9-10]. Therefore, human-computer interaction intelligent system will play an irreplaceable role in the natural environment protection system, which mainly includes the following three aspects: first, build a suitable natural ecosystem protection system for exploration and research [11-12]. According to the existing technical conditions, it is necessary to extract representative and typical data on biodiversity, ecosystem stability, climate change trends and other aspects from the natural environment as the research basis, and these data can be updated through continuous learning; Second, the system will automatically analyze and predict the development trend of various ecological problems; Third, the application of human-computer interaction intelligent system can comprehensively analyze and deal with various environmental problems. Based on the above considerations, we must make full use of modern information technology to integrate, analyze and process data resources under the harmonious coexistence mode between man and nature. The scientific and effective management and decision-making of data processing can be ensured through data fusion analysis and comprehensive processing capability.

2.3. Construction of Natural Environment Protection System

With the development of science and technology, people pay more and more attention to the protection of the environment. However, people do not protect the environment in isolation, but are closely related to social and economic development, resulting in serious damage to the natural environment. Therefore, people should not only actively participate in the process of environmental protection, but also actively participate in social activities to promote the protection of the natural environment [13-14]. Nature plays an important role in social life. It has strong flexibility and dependence. When dealing with nature and human beings, human beings have certain subjectivity and initiative. However, because human beings do not interact with the natural environment in some aspects, there will be some natural environment protection problems. Therefore, all sectors of society should actively participate in the natural environment protection. This paper mainly discusses the need to attach importance to the protection of the natural environment and interact with the natural environment in scientific and technological research. In order to promote the interaction between natural resources and the environment and the extent of the impact of the environment on the direction of human development, people can use the information tools represented by the human-computer interaction intelligent system to interact with natural resources and information to reduce energy waste and environmental pollution and improve the probability of obtaining relevant information data such as people's ability to protect the natural environment [15].

As a major environmental problem faced by human beings, natural environment protection will, to a certain extent, affect the sustainable development of human society in the future. At this stage, in the process of human social development, excessive exploitation and consumption of resources, industrial production have caused adverse effects on the natural environment, and even many natural disasters have caused damage to the natural environment. Under such circumstances, human beings have to seek ways and means to protect the natural environment. In particular, human survival activities produce a lot of harmful substances such as waste gas, waste water, waste residue, which will have a negative impact on human beings and the natural environment. Therefore, effective prevention and control of environmental pollution and reduction of environmental disasters have become an important problem that human beings must do well at present [16-17]. Since the reform and opening up, while vigorously developing the economy, China must also attach great importance to the construction of the ecological environment and research on the protection of the natural environment. However, due to the rapid development of China's economy, serious

damage has been caused to natural resources and environmental resources, and ecological and environmental problems have become increasingly prominent [18].

3. Experimental Design of Natural Environment Protection System Construction Based on Human-Computer Interaction Intelligent System

Through the analysis and research on the environmental protection and management of the world natural heritage, and in combination with the current situation and practical needs of the environmental protection and management of the scenic spot, the following aspects are discussed:

According to the methods of questionnaire survey, village cadre interview, on-site GPS fixed-point, etc., the basic situation of environmental impact factors such as tourism activities in the scenic spot and buffer zone, residents' living, agricultural planting, agricultural breeding, traffic roads, and monitoring facilities in 22 administrative villages in the nomination area and buffer zone, and the calculation of the four pollutant loads of COD, NH3-N, TN, and TP generated by the four main pollution sources of tourists' living, residents' living, fertilizer application, and livestock and poultry breeding, Analyze the threats of various influencing factors to the water source environment.

The calculation method is emission factor. The breeding cycle, excretion coefficient, excretion coefficient and average pollutant concentration of livestock and poultry are calculated according to the coefficient recommended by the National Environmental Protection Commission (see Table 1). The formula is as follows:

$$W = P \times T \times \varphi \times R \tag{1}$$

Where: W is the pollution load of livestock and poultry breeding, T is the breeding quantity, φ is the pollutant discharge coefficient, and R is the average content of pollutants in feces.

Table 1. Excretion coefficient of livestock and poultry breeding and average content of pollutants in feces

Type	Cycle	Excreta	Discharge coefficient	Average pollutant content			
				COD	NH_3-N	TN	TP
pig	199	dung	2	52	3.1	5.9	3.4
		urine	3.3	9	1.4	3.3	0.5
cattle	365	dung	20	31	1.7	4.4	1.2
		urine	10	6	3.5	8	0.4
sheep	365	dung	2.6	17.3	1	2	1.1
		urine	0.8	3	0.5	1.1	0.2
poultry	210	dung	0.12	45	4.8	9.8	5.4

The pollution load contribution rate β is calculated as follows:

$$\beta = A/B \times 100\% \tag{2}$$

Among them, A is the pollutant load produced by different pollution sources, and B is the total pollutant load in the study area.

Basic information of the study area: the nomination area and buffer zone involve 3 counties, 7 townships and 22 villages, with a total population of 5692 households, 21905 people and 16647 permanent residents. See Table 2 for details.

Table 2. Basic overview of the study area

Region	The Measure Of Area	Number Of Villages	Households	Number of residents	Number of permanent residents
Place of nomination	40275	5	718	2637	2107
Buffer zone	37239	18	4974	19268	14540
Total	77514	22	5692	21905	16647

4. Experimental Analysis of Natural Environment Protection System Construction Based on Human-Computer Interactive Intelligent System

4.1. Water Quality

At present, no industrial pollution sources have been found in the nomination area and buffer zone, mainly domestic sewage and agricultural production wastewater. A preliminary environmental quality assessment has been carried out for its main pollutants (COD, NH3-N, TP, TN). The results show that the water quality of all rivers meets the Class I standard, while the COD indicators meet the Class I standard, and TN meets the national Class II standard (Figure 1).

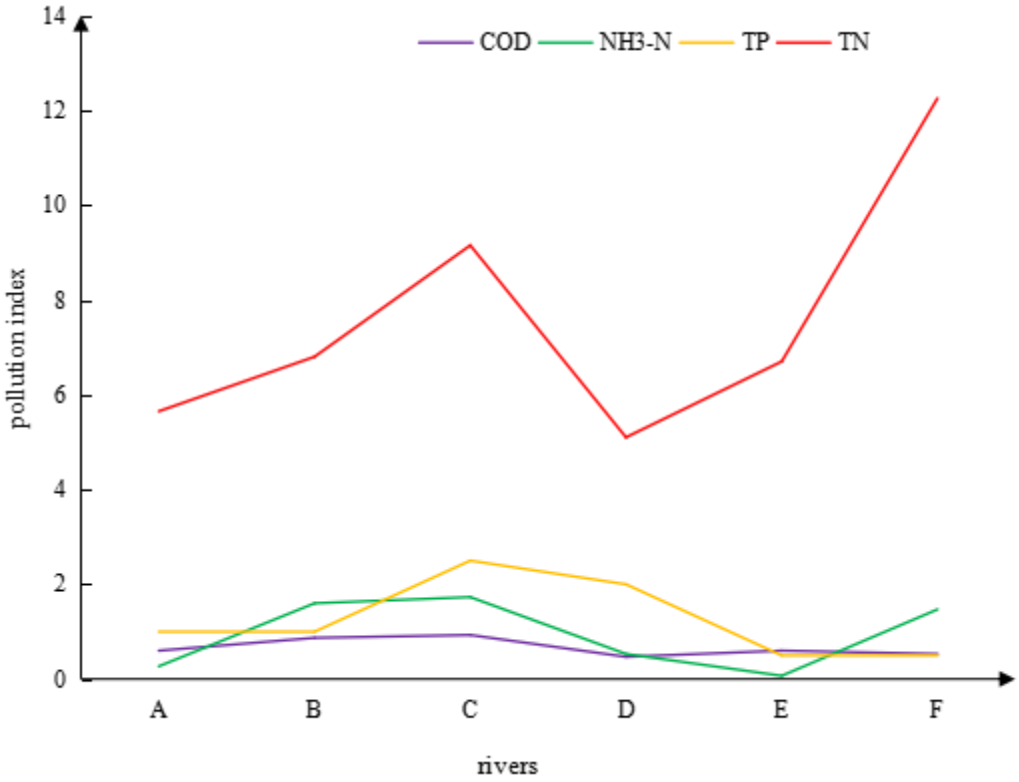

Figure 1. Pollutant index of main rivers in the nomination area and buffer zone

4.2. Atmospheric Environment Quality

According to the survey, the atmospheric pollution in the nomination area and buffer zone mainly comes from the life and road transportation of rural residents. There are no industrial and large-scale environmental air pollution sources, and the overall atmospheric environment quality is

good, meeting the Class I standard (Table 3).

Table 3. Pollution index of main air pollutants in the nomination area and buffer zone

Category	Assessment index and pollution index		
	SO_2	NO_2	TSP
Average value	4	3	39.35
Pollution index	0.08	0.04	0.33
Evaluation results	Class I standard		

4.3. Analysis of Pollution Load Generated By Tourist Activities in Scenic Spots

As the domestic garbage from hotels, farmhouses and other tourism reception facilities in the tourist concentrated areas inside and outside the scenic area has been timely transported to the county for disposal, while most of the domestic sewage is disposed on the spot, the amount of nitrogen and phosphorus produced by domestic garbage of tourists and employees in the scenic area is not calculated, but only the amount of sewage discharge. According to the survey, the daily per capita water consumption of the scenic spot is 100 L, the wastewater discharge is 85 L, the daily domestic sewage discharge of tourists and staff is 50945.6 m3, and the four pollutant loads of COD, NH3-N, TN and TP are 29.97 t, 4.67 t, 5.81 t and 0.68 t respectively (Table 4).

Table 4. Analysis results of pollutants generated by scenic spot tourism

Category	Garbage output (t)	Sewage discharge (m^3)	Sewage pollution load (t)			
			COD	NH3-N	TN	TP
Tourist	495	36650	21.5	3.35	4.17	0.54
Practitioners		14395.6	8.47	1.32	1.64	0.14
Total	495	50945.6	29.97	4.67	5.81	0.68

At present, there are many problems to be solved in the research of environmental problems, and the harmonious coexistence and sustainable development of man and nature are important components of realizing the harmonious coexistence, sustainable development and green development strategy of man and nature. Make full use of information technology to transmit all kinds of environmental monitoring data to human beings in real time, so that people can understand these environmental information in a timely manner, and at the same time bring them into the ecosystem protection network for monitoring analysis and governance research. At the same time, under the model of harmony between man and nature, we will achieve efficient integration and coordinated development between man and nature. In the future, we can consider establishing a complete natural environment information perception system to realize the visual monitoring, monitoring and management functions of the natural environment, and finally achieve the goal of harmonious coexistence between human and nature and the construction of environmental protection system.

5. Conclusion

In the current process of economic and social development, due to human destruction of nature, the pollution of the natural environment has become more and more serious. Therefore, building a sustainable natural environment protection system is of great significance for protecting the ecological environment and promoting the harmonious coexistence between human beings and nature. Therefore, in order to better achieve the above goals, we need to take a variety of measures to fully take into account the differences between the groups in which people live. Effective

interaction between man and nature will help human beings to better play their subjective initiative, and thus effectively promote the progress of natural environment protection. In this case, human-computer interaction intelligent system will also play an important role in the process of natural environment protection.

Funding

This article is not supported by any foundation.

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

References

[1] *Rui H X, Fan L, Xiao F C, Mingze L, Zapan B. Formation Mechanism of Environmental Protection Behaviours of Community Residents: A System Dynamics Perspective. Kybernetes (2018) 50(2): 386-412. https://doi.org/10.1108/K-12-2018-0653*

[2] *Wen W, Qi W Z. Evaluation of Rural Financial Ecological Environment Based on Machine Learning and Improved Neural Network. Neural Comput Appl. (2020) 34(12):9335-9352.*

[3] *Bokolo A Jr. Green Information Systems Refraction for Corporate Ecological Responsibility Reflection in ICT Based Firms: Explicating Technology Organization Environment Framework. J. Cases Inf. Technol. (2020) 22(1): 14-37. https://doi.org/10.4018/JCIT.2020010102*

[4] *Abhishek B, Manish G, Vijay P, Zuo P Z. Guest Editorial: Human-Computer Interactions: Investigating the Dark Side and Proposing A Model Based on an Empirical Collection of Studies. Aslib J. Inf. Manag. (2020) 74(5): 749-757.*

[5] *Rodrigo F G, Frederick M C. A. User Oppression in Human-Computer Interaction: A Dialectical-Existential Perspective. Aslib J. Inf. Manag. (2020) 74(5): 758-781*

[6] *Mesfer A, Shauban A S, Abdullah A, Muhammad A N, Muhammad A M, Mohammed H. An Architecture Supporting Intelligent Mobile Healthcare using Human-Computer Interaction HCI Principles. Comput. Syst. Sci. Eng. (2020) 40(2): 557-569.*

[7] *Chun M C, Tsu C S, Tsu C S, Chien H S. Influencing Factors on Students' Learning Effectiveness of AI-Based Technology Application: Mediation Variable of the Human-Computer Interaction Experience. Educ. Inf. Technol. (2020) 27(6): 8723-8750.*

[8] *Meng T X. Application of Human-Computer Interaction virtual Reality Technology to the Design of Ice and Snow Landscapes. Int. J. Humanoid Robotics (2020) 19(3): 2240001:1-2240001:15.*

[9] *Wen J H, Premalatha R, R S A. Physical Education System and Training Framework Based on Human-Computer Interaction for Augmentative and Alternative Communication. Int. J. Speech Technol. (2020) 25(2): 367-377.*

[10] *Zitian L, Samuel R D J, Sujatha K. Computer Vision for Facial Analysis using Human-Computer Interaction Models. Int. J. Speech Technol. (2020) 25(2): 379-389.*

[11] *Yu B L, Sivaparthipan C. B, Achyut S. Human-Computer Interaction Based Visual Feedback System for Augmentative and Alternative Communication. Int. J. Speech Technol. (2020) 25(2): 305-314.*

[12]Simone K, Anna L M N, Josef B S, Nicole B D, Selen T, Anders D. Esports Meets Human-Computer Interaction. Interactions (2020) 29(3): 42-47. https://doi.org/10.1145/3524855

[13]Tim G, Sukrit V. The Expanding Circles of information Behavior and Human-Computer Interaction. J. Libr. Inf. Sci. (2020) 54(3): 389-403. https://doi.org/10.1177/09610006211015782

[14]Dhananjay B, Rishabh S, Narendra R, Praphull M, Atul K U, Siddhartha Kr. Arjaria:Responsive Human-Computer Interaction Model Based on Recognition of Facial Landmarks using Machine Learning Algorithms. Multim. Tools Appl. (2020) 81(13): 18011-18031.

[15]Aylin A, Erman Ç, Metin D. Selection of Suitable Distance Education Platforms Based on Human-Computer Interaction Criteria Under Fuzzy Environment. Neural Comput. Appl. (2020) 34(10): 7919-7931.

[16]Hasan K, Hatice K. Development of Adaptive Human-Computer Interaction Games to Evaluate Attention. Robotica (2020) 40(1): 56-76. https://doi.org/10.1017/S0263574721000370

[17]Simone D C, Monalessa P B, Ricardo D A F. Ontologies in Human-Computer Interaction: A Systematic Literature Review. Appl. Ontology (2020) 16(4): 421-452. https://doi.org/10.3233/AO-210255

[18]Meredith B C, Nicklas D. Human Computer Interaction on the Modern Flight Deck. Int. J. Hum. Comput. Interact. (2020) 37(7): 585-587.