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### Research progress of cervical cancer

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#### ABSTRACT

Cervical cancer is a common malignant tumor of the female reproductive system. Its incidence is second only to breast cancer, and it is gradually becoming younger. Because it has great harm to women's physical and mental health, and its related research has been the focus of public attention, we decided to conduct research on the pathogenesis, prevention and intervention, detection methods, treatment methods, and postoperative effects of cervical cancer Summary discussion.

**Keywords:** Cervical cancer; Pathogenesis preventive intervention; Testing method; Treatment method


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## 1. Introduction

Cervical cancer has been plagued by female compatriots, and its morbidity and mortality are also quite high. According to statistics, in 2012, there were approximately 526,600 new cases of cervical cancer, of which 265,700 died, and 85% of the cases occurred in low- and middle-income countries<sup>[1]</sup>. In 2015, there were 98,900 new cases of cervical cancer and 30,500 deaths<sup>[2]</sup>. Therefore, it is of great medical and social significance to carry out research on related aspects of the progression of cervical cancer.

## 2. Definition of artificial intelligence and its characteristics

The term "artificial intelligence" was originally proposed in the 1950s, but there is still no standard definition. Generally, it refers to the ability of machines to achieve the cognitive, identification, analysis, and decision-making capabilities of human intelligence<sup>[3]</sup>. The simulation of the information process of consciousness and thinking is an interdisciplinary discipline that integrates computer science, control science, physiology, and philosophy. Compared with traditional automation, artificial intelligence has the characteristics of deep learning, cross-border integration, human-machine collaboration, open group intelligence, and autonomous control. Artificial intelligence has two technical routes: data-driven model learning and cognitive bionic-driven brain-like computing.<sup>[4]</sup> The data-driven model learning route is based on massive data to carry out model learning. By training massive data, model parameters are obtained based on actual scene learning, and parameters are dynamically adjusted adaptively according to specific needs. Brain-like computing driven by cognitive bionics is based on the simulation of the brain's operating mechanism to carry out research on brain-like chips and brain-like algorithms, such as neural state computing.<sup>[5]</sup> In the past, artificial intelligence technology was mainly model learning. At present, the United States, the European Union, South Korea, and China are vigorously deploying brain-like

## 3. Application of artificial intelligence technology in electric system

With the change of energy structure, the new energy industry has developed rapidly. The high proportion of distributed energy penetration and large-scale access to electric vehicles make the power grid structure more complex and flexible, with high uncertainty, strong nonlinearity, and complex coupling relationships.<sup>[7]</sup> Features. The power grid presents an intelligent development trend, and its requirements for power system application technology tend to be efficient, simple, and reliable. However, traditional technologies have problems such as low reliability, lack of long-term verification, and unclear mechanisms. Therefore, with its advantages and characteristics, artificial intelligence technology has become a powerful measure to solve complex power system problems and an effective tool to improve the safety, reliability and economy of the new generation of power systems.<sup>[8]</sup>

### 3.1 Application of artificial intelligence in reactive power optimization of electric system

Reactive power optimization is one of the means to ensure power system safety and improve operating economy.<sup>[9]</sup> Through reactive power optimization, each performance index can be optimized. But reactive power optimization is a complex nonlinear problem. AI algorithms can be applied to reactive power optimization of power systems. For example, the improved simulated annealing algorithm is used to solve the reactive power optimization problem of high and medium voltage distribution networks, and a memory-guided search method is used to speed up the search speed. The mode method performs local optimization to increase the possibility of obtaining the global optimal solution, can obtain the global optimal solution with a large probability, and improves the convergence stability. The tabu search method is fast in optimizing, and has a great advantage in jumping out of the local optimal solution.<sup>[10]</sup> Genetic algorithms have great advantages in

solving multi-variable, nonlinear, and discrete problems.<sup>[11]</sup> The model that requires less solution information is simple and has a wide application range.<sup>[12]</sup>

### **3.2 Application of artificial intelligence in electric power system relay protection**

The adaptive relay protection device can adapt to various changes, improve the protection performance, and adapt it to various operating modes and fault types. It can effectively deal with various fault information and get reliable protection. With the help of artificial intelligence technology, not only can fault information be extracted, but also its self-learning and adaptive capabilities can be used to adaptively adjust protection settings and action characteristics according to different operating conditions.<sup>[13]</sup>

### **3.3 Application of artificial intelligence in suppressing low-frequency oscillations of power systems**

Large-scale power grid interconnection is prone to low-frequency oscillations, which seriously threatens the safety of power systems. Artificial intelligence provides technical support for the control of low-frequency oscillations in power systems. Artificial neural networks, fuzzy theory, GA and other artificial intelligence technologies are applied to the research of FACTS controller and adaptive PSS, which provides a new method for suppressing low-frequency oscillations in power systems.<sup>[14]</sup>

### **4. Analysis of the advantages of artificial intelligence in the electrical industry**

The application of artificial intelligence technology in the automation control of electrical appliances realizes the diverse functional requirements of its electrical automation control. The use of artificial intelligence technology to implement automatic control in the electrical appliance automation control system not only facilitates the effective collection of various data information in automatic control, but also enables effective simulation of more controlled workload of electrical automation.<sup>[15]</sup> In addition, artificial intelligence technology uses, the technical

system of operation and function simulation, which is applied in electrical automation control, can fully meet the various functional requirements of its electrical automation control through the application of artificial intelligence technology, and can effectively reduce the cost of its equipment production and manufacturing and promote its work. Significantly improved efficiency. In addition, artificial intelligence technology is applied in the automation control of electrical appliances.<sup>[16]</sup> Through the simulation and data conversion of the system operating conditions in the electrical automation control system, real-time management and control of equipment production is achieved, thereby achieving better production operation and management economic benefits.<sup>[17]</sup>

The application of artificial intelligence technology in the automation control of electrical appliances can also enable its automation control to be optimized and designed to promote system performance improvement and meet the needs of various electrical appliances automation control. In the design of electrical automation, the traditional control system design is designed and implemented by the designer in combination with previous technical experience.<sup>[18]</sup> It is highly dependent on the personal ability of the technical staff, and it is easy to cause design quality problems due to insufficient personal experience or lack of technical level. Thereby adversely affecting its specific operation and use. With the popularization and application of computer technology, the level of electrical automation design has been continuously improved. The application of artificial intelligence technology in electrical automation control has promoted the improvement of its design work efficiency, and at the same time, it has provided more sufficient quality effects for electrical automation control. Protection. The application of artificial intelligence technology in the design of electrical automation control can not only effectively reduce the difficulty of its operation, but also the quality and effect of the design are

significant. It can ensure the optimization of the electrical automation control design scheme and improve its design level.<sup>[19]</sup>

The application of artificial intelligence technology in the automation control of electrical appliances also helps to promote the development and progress of related industries. With the continuous development and progress of science and technology, the level of electrical automation technology has also been continuously improved, more and more artificial intelligence electrical products, and gradually applied and realized in various industries. Taking the electrical appliance automation control system as an example, artificial intelligence is used as an important technical support for the realization of its automation control.<sup>[20]</sup> The use of implementation in its control design also promotes the simplification and more efficient development of its control operations. The development of other related industries has a very positive role and significance.<sup>[21]</sup>

## 5. The development trend

The follow-up research on the issue of power system planning based on artificial intelligence technology can be expanded from the following aspects:

1) In the case of comprehensively promoting the construction of distributed power sources and developing the local generation mode of distributed generation based on clean energy, in order to fully consider The impact of multi-stage planning cycles, energy supply reliability, and energy prices, to optimize the configuration and achieve low-carbon economic power consumption. How to use artificial intelligence technology to effectively consider the coordination of power planning and grid planning, and achieve efficient energy transmission is the power system One of the research focuses of planning.

2) Considering the randomness of renewable energy power generation, the fluctuation of fuel prices, the growth of future loads, the uncertainty of the future availability of fuel supply systems and the uncertain impact of plug-in electric

vehicles, it is necessary to combine random optimization and powerful programming The ability of artificial intelligence technology to solve the problems existing in such system planning.

3) The development of future system planning methods is mainly a combination of centralized and distributed, and the application of artificial intelligence technology combining multi-agent technology, deep learning, and reinforcement learning needs further research.

## 6. Conclusion

All in all, the artificial intelligence technology has been continuously developed and improved, and it has been applied to the power system to achieve the orderly operation control and reasonable planning and management of the power system, which has played a very important role. At the same time, with the gradual deepening of the compatibility between artificial intelligence technology and power systems, the application of artificial intelligence technology in power systems will inevitably develop in a deeper and wider field. In addition, with the introduction of China's electricity construction and electricity market competition mechanism, the increase in uncertain factors and operational complexity will promote the application prospects of artificial intelligence technology.

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