

Study on the Effects of Artificial Intelligence on Drugs

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Abstract—With the further development of science, artificial intelligence is gradually approaching people's daily life, playing a more and more important role in various fields. This paper summarizes the participation degree of artificial intelligence in drug research and development, production, transportation and other aspects, reveals the artificial intelligence technology, more and more be used to drug development, screening, production, transportation, sales and other links, will greatly improve the efficiency of each link on drugs.

Keywords—artificial intelligence; drugs

I. INTRODUCTION

This paper first emphasizes the development velocity of the pharmaceutical industry is based on the development of science and technology, with the development of science and technology, especially the artificial intelligence technology, was applied in drug research and development, selection, production, sales and transportation and other fields, for the development of medicine and health care industry has brought unprecedented opportunities and challenges.

II. MEDICAL AND HEALTH AREAS HIGHLIGHT THE CHARACTERISTICS OF HIGH TECHNOLOGY

Throughout the ages, the technological development of medical and health services reflects the level of science and technology progress. Its evolution is always related to the level of science and technology at that time. "The father of the computer" John von Neumann points out: "technology is growing at its unprecedented speed... We are going to go in a direction similar to the singularity, and once we go beyond the singularity, the human society we are now familiar with will be very different.

III. APPLICATION OF ARTIFICIAL INTELLIGENCE IN MANY FIELDS

Artificial Intelligence, abbreviated as AI, is a branch of computer science. It is an interdisciplinary subject. It belongs to the intersection of natural science and social science. It is a new technology science for the research and development of the theory, method, technology and application system used to simulate, extend and expand human intelligence. In recent years has been gradually applied in machine vision, fingerprint recognition, face recognition, retina recognition, iris recognition, palmprint recognition, expert system, automatic planning, intelligent search, theorem proving, game theory, automatic programming, intelligent control, robotics, language and image understanding, genetic programming, health etc..

IV. EFFECT OF ARTIFICIAL INTELLIGENCE ON DRUG DEVELOPMENT

Drugs are substances used to prevent, treat and diagnose diseases. In theory, drugs refer to chemicals that affect physiological functions and cell metabolism of organs, which belong to the category of drugs, including contraceptives and health care drugs.

The social characteristics of drugs, on the basis of their natural attributes, combine the reality of drugs in scientific research, production, circulation and use, and occupy an important position in the field of medical and health. The influence of artificial intelligence on the development of drugs is closely related to people's health and health. I have combed the effects of artificial intelligence on the development of drugs from the following aspects.

A. Artificial Intelligence Technology Applied to Drug Development and Screening

Drug development and screening has been an important field of medical industry. In other words, the level and scale of drug development determine the development of medical industry to some extent. So far, the research and development of new drugs still need high cost, long-term experiments and repeated safety tests. Even so, it can't guarantee whether they will succeed in the end. And the application of artificial intelligence can alleviate the problem to a great extent. For example, in drug screening, can use artificial intelligence with the strategy of network and evaluation of network and Monte Carlo tree search algorithm (Monte Carlo Tree Search), the selection of compounds with safety from tens of thousands of alternative compounds, as the best alternative drug, while reducing the cost and time in drug development.

B. The Application of Artificial Intelligence to the Production Process of Drugs

In the field of chemical pharmacy, there are many characteristics, such as complex production process, changeable object characteristics, intermittent or semi continuous production process, strong corrosive medium, flammable, explosive and polluted environment. The detection and control of process process are faced with many factors, such as many factors and large range of change. In order to ensure high quality, high quality, energy saving and stable security of production, it is necessary to have reliable and effective means of detection and control. It can be seen that the field of chemical medicine has urgent requirements for improving detection and artificial intelligence automatic control technology support. The advanced support environment provided by the comprehensive development of modern science and technology will promote the rapid development of chemical pharmaceutical process control technology.

Along with the automation instrumentation and devices such as artificial intelligence technologies continue to emerge and the rapid pace of upgrading, development and modern control theory and artificial intelligence theory, introduced a variety of new practical control methods, effectively improve the efficiency and quality of production safety of the drug.

At present, many pharmaceutical enterprises are exploring the automatic intelligent control of the whole process from the API to the preparation. The field of Chinese medicine industry has also introduced a lot of foreign advanced equipment, domestic pharmaceutical automation level and quality has been significant progress, but also did not realize the automation of pharmaceutical production process control, quality analysis and control are still part of the whole process of product release by artificial intelligent, lack of quality monitoring online.

The current GMP standard for the relevant provisions of the automation system compared with foreign countries, it is relatively weak, compared with the relevant international standard, especially the excellent American manufacturing automation standard (GAMP) requirements is not difficult to find, China's GMP standard lack of strict requirements in automation instrumentation and automation system design, the the computer system validation requirements is relatively vague, there are application of artificial intelligence technology in the field of drug production has more broad prospects.

C. The Application of Artificial Intelligence in the FIeld of Storage and Logistics of Drugs

After years of development, although most of the domestic pharmaceutical enterprises have realized the automation of the production system, but the storage logistics automation is not much. From the practical experience of international famous pharmaceutical enterprises, which is widely applied in automated warehousing, it is an inevitable trend for domestic enterprises to achieve warehousing and logistics automation. There are strict requirements for logistics system in pharmaceutical industry regulations, especially those requiring cold chain transportation, which puts forward higher requirements for the application of AI technology.

V. THE PROSPECT OF THE INFLUENCE OF ARTIFICIAL INTELLIGENCE ON THE DEVELOPMENT OF DRUGS

The great development of AI in the field of medical and health is due to the continuous accumulation of medical data and the continuous growth of database. At the same time, AI is also benefiting from the increasing function of AI in analyzing medical data. In the application level of large data analysis to the medical industry, the most significant field is the intelligent screening and judgment of drugs.

From a technical point of view, drug developers use modern information technology to collect and analyze large amounts of data and information, machine learning and computational method with artificial intelligence, quickly identify the valid receipt basis, in order to make highly accurate decisions in the future, screening of new drugs, also has a more broad space.

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