# Application Research of Applied Mathematics in the Field of Information Technology

# Yanhua Fu

Jiangxi Vocational Technical College of Industry&Trade, Nan Chang, Jiangxi, China yanhuasanyue1982@163.com

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**Abstract:** In the development of China's socialist market economy, the development of information technology has played a vital role. In the field of information technology, applied mathematics is widely used, which promotes the development of information technology improvement and innovation. According to the specific situation in the field of information technology in China, this paper analyzes the important role of applied mathematics in the field of information technology, and formulates the specific application of applied mathematics in the field of information technology.

## **1. Introduction**

With the rapid development of science and technology, the application scope of information technology is constantly expanding, which has penetrated into all walks of life, played a good role in promoting the development of various industries, and also accelerated the process of China's modernization. At present, in various fields, using mathematical theory knowledge can promote the diversification of problems to be dealt with, which is also the development direction of mathematics. Applied mathematics has played a certain role in promoting the field of information technology. Therefore, the application of applied mathematics in the field of information technology research activities can promote the progress of applied mathematics and information technology, contribute to the coordinated development of the two.

# 2. Important Role of Applied Mathematics in the Field of Information Technology

# 2.1 Promote the Improvement of Information Technology

At this stage, information technology has made rapid development and progress, and network database information content has become more perfect. In the initial stage, people's use and need of data and information continue to increase, increasing the pressure of data processing to a large extent. In view of these tedious and confusing data and information content, it is difficult for some researchers to carry out scientific sorting and processing activities quickly. In the face of this situation, some professionals suggest that applied mathematics and information technology should be closely linked and developed into a whole. Using a variety of mathematical technology to apply data warehouse technology to the statistical activities of data can promote the relevant data information to become more standardized, accelerate the development of data collation activities, and ensure the order of data information. In this way, the role of applied mathematics is highly reflected in the field of information technology. In addition, applied mathematics has played a vital role in the planning of enterprises and the transmission of Internet information and data, realizing the improvement of information technology and promoting the development of information technology in a sounder direction.

## **2.2 Expand the Field of Information Technology**

Mathematics also plays an important role in the expansion of information technology. Encryption and information technology in the field of information technology can be closely integrated through mathematics, which can improve the computer security performance. For the advanced artificial intelligence technology, convolutional neural network algorithm is the foundation and plays a vital role. In convolution neural network algorithm, the development of related proof activities is based on mathematics. Other artificial neural network algorithms in mathematics have played a certain role in promoting the progress of modern artificial intelligence. At present, in the neural network algorithm, a variety of technologies have been applied, such as Boston robot, face recognition, speech recognition and so on. These achievements can't be separated from the development of scientific and technological hardware. However, the breakthrough of the initial mathematical conception has also played an important role.

## 2.3 Information Technology Promotes the Progress of Applied Mathematics

Applied mathematics can play a good role in promoting the progress of information technology. The emergence of information technology is based on mathematical design activities, and it will also play a good role in promoting the progress of mathematics. At present, in mathematics, both professional computing activities and related analysis activities are inseparable from computer software. Using MATLAB and other software can significantly improve the efficiency of mathematical analysis. In the proof activities of many problems in applied mathematics, the completion of related work relies on the updating of computer algorithms, which promotes the progress of applied mathematics. The logic circuit of information technology promotes the further development of Boolean algebra, and the completion of all operation circuits also improves the practicality of mathematics. In conclusion, it can be found that information technology and applied mathematics can't be quickly applied to information technology, it will certainly be applied to some work in the future. The progress of information technology will also optimize the carrier of applied mathematical operations, reduce the verification time of users, and promote the efficient completion of mathematical proving activities.

## 3. Application of Applied Mathematics in the Field of Information Technology

#### 3.1 Application in Network Technology

At this stage, people's production and life depend on network technology to a large extent. The completion of information work is inseparable from the basic role of network technology, and the development of all industries and departments are inseparable from the support of network and information. The network structure is complicated, and the supporting role in the development activities is the topological structure. The daily traffic used by people is continuously increasing, and the transmission tools and media are constantly changing. The network contains a lot of information and data. In addition, the structure of the Internet is lack of systematicness, which significantly reduces its operation efficiency. If we want to exclude some low value data and information, we need to use applied mathematics, which can improve the efficiency of network application. Using mathematical model structure construction activities and algorithm design activities can promote the scale of network application platform to expand, play a good role in improving the current network structure, promote the completion of information and resource sharing work, and then reflect the value of the technical field. In view of the network topology, we can improve the wireless technology through the network location and node information. On this premise, through the relevant content of applied mathematics, we can ensure the completion of network structure integration, reduce some operation processes, and make the operation activities more convenient.

### 3.2 Application in Pattern Recognition and Image Processing

In pattern recognition, computer technology plays a fundamental role, mainly carrying out related classification and recognition activities for the system pattern. Through the processing of all information and status, we can grasp the specific situation. The improvement of technical methods is helpful to improve the network technology and increase the amount of information rapidly. The

information image can be directly changed towards the recognizable information, which can promote the smooth progress of image processing. Image recognition is based on algorithm structure statistics. In specific activities, we can use functional equation to carry out relevant analysis and summary activities to ensure the completion of data processing activities, and make relevant research and analysis.

In the aspect of pattern recognition, the application and processing of information are included. Because the non-digital information content belongs to its objective object, in order to ensure the scientificity and accuracy of computer system values and symbols, no mistakes should be made in the relevant processing work. If it is necessary to carry out image recognition activities, because the images are included in the non-digital category, the enterprise processing difficulty coefficient is relatively high. Therefore, using applied mathematics knowledge through the computer can scientifically identify non-digital information, and promote the accuracy of information resources to be guaranteed. Applied mathematics has been widely used in many fields, such as product detection, fingerprint identification and so on.

#### **3.3 Application in Data Encryption**

Generally speaking, when using the Internet, there will be personal privacy and encrypted files. By using applied mathematics, the security of all users' personal information can be well guaranteed. For enterprises, some data need scientific encryption protection, because these important data belong to enterprise secrets and are closely related to the survival of enterprises. For some core secrets and data information of enterprises, special processing and encryption activities can be carried out through applied mathematics. To open these texts, you need to enter the corresponding password, which significantly improves the security performance of these important information. With the expansion of the scale of trading platform, it affects more and more people's lives and has developed into a part of people's lives. Payment activities are indispensable in the trading platform. In the process of carrying out trading activities with others or financial institutions, people usually use passwords or fingerprints for specific payment activities, which can make the trading activities more standardized and effectively guarantee the security performance of trading activities. In the data encryption work, applied mathematics improves the security performance of people's life, work and transaction.

#### 3.4 Application in Network Technology

With the rapid development of science and technology, the way and speed of information dissemination have made significant progress. In view of the current situation, using the Internet can complete most of the important information dissemination activities. With the rapid progress of social economy, people's material and spiritual living standards are getting higher and higher. More and more people begin to join in the network understanding and learning activities, rapidly expanding the network users, but also increasing the pressure of the network system. In order to deal with the above problems properly, applied mathematics can be used to improve the standardization of network model based on its own advantages. When constructing the network model, we need to further carry out the research activities of traditional partial information, and use experiments or hypotheses to make the data information more perfect.

### 4. Conclusion

There is a close relationship between applied mathematics and information technology. With the development of applied mathematics research in China, its research level is also continuously improving. Through the basic role of applied mathematics, the specific problems of informatization can be dealt with, which is helpful to improve the ability and level of independent innovation. The continuous development of applied mathematics research will effectively promote the development of information industry, enhance its comprehensive competitiveness, and help it stand out in the increasingly fierce market competition.

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