Research on Computer Software Teaching Method of Digital Media Art Theory Under the Background of Big Data

Lujun Cao(✉)

Software Engineering Institute of Guangzhou, Guangzhou City 510990, Guangdong, China
caolujun520@163.com

Abstract. With the advent of the Internet era, enterprises put forward higher requirements for the comprehensive quality of talents. However, in the traditional computer software teaching, teachers carry out relatively few software teaching contents, and most of them focus on the teaching of computer history evolution and other related contents, resulting in the lack of outstanding computer software application ability of most students, which seriously affects the teaching effect. Based on this, this paper analyzes the application of digital media art theory in computer software teaching based on Apriori algorithm, in order to further improve the quality of computer software teaching.

Keywords: Apriori algorithm · Digital media · Computer software

1 Introduction

At present, computer software teaching usually focuses on classroom demonstration, which leads to the loss of students' dominant position in the classroom, which is not conducive to improving students' software operation ability. According to the traditional vocational education model, the teaching purpose is mainly to let students learn professional knowledge, systematic knowledge and cultural basic knowledge, take professional knowledge as the basis of students' learning, and pay attention to the systematicness and coherence between disciplines, learning and memory. Despise the cultivation of students' ability and creative ability; Emphasis on Teachers' classroom as the main body. Students follow the teacher's baton, weaken students' personal ideological performance, lack of initiative, catch up with the progress in teaching methods, instill the whole class, and students lack discussion and interaction time. This can not be unified with the practical skills advocated by today's society, and it is difficult to make it better meet the needs of social development. Based on this, the in-depth analysis of computer software teaching method based on digital media art theory under Apriori algorithm has important practical significance.

M. A. Jan and F. Khan (Eds.): BigIoT-EDU 2022, LNICST 465, pp. 614–619, 2023.
https://doi.org/10.1007/978-3-031-23950-2_67

2 Apriori Algorithm

2.1 Description of Apriori Algorithm

In the Apriori algorithm, the basic idea of finding the maximum item set is that the algorithm needs to process the data set in multiple steps. The first step is to simply count the frequency of all item sets containing one element, and find out those item sets that are not less than the minimum support, that is, one-dimensional maximum item sets, Starting from the second step, the cycle process is: in step k, a k-dimensional candidate item set is generated according to the (k-1) dimensional maximum item set generated in step k-1, and then the database is searched to obtain the item set support of the candidate item set, which is compared with the minimum support, so as to find the k-dimensional maximum item set.

For the convenience of the following description, it is hereby agreed as follows:

(1) The items in database transactions are arranged in alphabetical order. Each item is identified by <TID, item>, where TID represents the identifier of the corresponding transaction and item represents the item name.
(2) The number of items in each item set is called the size of the item set. When the size of the item set = k, the item set is called k-itemset (k-dimensional item set).

The following symbols encountered below represent the corresponding contents
K-itemset k-dimensional itemset
LK maximum k-i temset with minimum support
CK candidate k-itemsets (potential maximum item set).

2.2 Description of Apriori Algorithm

The first step of Apriori algorithm is to simply count the frequency of all itemsets containing one element to determine the largest one-dimensional itemset. In step k, it is divided into two stages. Firstly, a function SC is used_ Candidate: generate the candidate item set CK through the maximum item set LK-1 generated in step (k-1). Then search the database to calculate the support of the candidate item set CK. In order to calculate the support of the items in CK more quickly, the function count is used in this paper_ Support calculates support.

Apriori algorithm is described as follows

(1) C1 = {candidatel-i temsets};

(2) L1 = {c ∈ C1|c. count ≥ minsupport};

(3) For(k = 2, Lk-1 ≠ ϕ, k++) //Until the maximum project set can no longer be generated

(4) Ck = sc_ candidate(Lk-1); //Generate a candidate project set with k elements

(5) for all transactions t ∈ D //Handling

(6) Ct = count_ support (Ck, t); //The set of candidate items included in the transaction t

(7)for all candidates c ∈ Ct

(8) c. count = c. count +1;

(9) next.
(10) $Lk = \{c \in Ck | c.\ count \geq minsupport\}$;
(11) next
(12):resultset = resultset $\cup$ Lk

Where, D represents the database; Minsupport represents the given minimum support; Resultset represents all the largest itemsets. Sc_ Candidate function.

The parameter of the function is LK-1, that is, all the maximum k-1-dimensional itemsets, and the result returns the candidate itemset CK containing K items. In fact, CK is a superset of the maximum k-dimensional itemset. Through the function count_ Support calculates the support of the project, and then generates LK.

The advantage of Apriori algorithm is that when the support is not too low, the number of database scans is not much, and the spatial complexity of the algorithm is small. Disadvantages: the algorithm may generate a large number of candidate sets and may need to scan the database repeatedly.

Apriori algorithm is the basic algorithm of association rule mining. Although it has been optimized to some extent, there are still unsatisfactory places in practical application. Therefore, people have proposed some methods to improve Apriori algorithm from different angles. Including: ① reduce the amount of scanned data, ② improve the search speed by using the prefix tree, ③ reduce the number of scans, and ④ reduce the number of candidate itemsets.

3 Digital Media Art Theory Under Apriori Algorithm

With the continuous progress of computer technology, communication technology and digital broadcasting, digital media art with Internet and wireless communication as the communication carrier and traditional media content and innovative content mode as the core is rising rapidly all over the world, and is changing people's way of information hunting and the form of leisure and entertainment. Its industries cover information services, communication, advertising Communication, electronic entertainment, animation, games, online education, publishing and other fields.

3.1 Overview of Digital Media

Digital media refers to the information carriers that record, process, transmit and acquire the process in the form of binary numbers. These carriers include digital sensory media such as text, graphics, images, sound, video images and animation, and the presentation media (coding) representing these sensory media. They are commonly referred to as logical media, as well as physical media for storing, transmitting and displaying logical media. But in the general sense, the so-called digital media often refers to sensory media.

Digital media is a highly integrated interdisciplinary subject of science and art, which is dominated by information science and digital technology, based on mass communication theory and guided by modern art, and applies information communication technology to the fields of culture, art, commerce, education and management. Digital media includes various forms such as image, text, audio and video, as well as digitization in communication form and content, that is, the digitization process of information collection, access, processing and distribution. Digital media has become the latest information carrier after language, text and electronic technology.

3.2 Types of Digital Media

Digital media can be divided into many kinds according to different classification methods. If divided by time attribute, digital media can be divided into still media and continuous media. Still media refers to digital media whose content will not change over time, such as text and pictures. Continuous media refers to digital media whose content changes over time, such as audio and video.

According to the source attribute, it can be divided into natural media and synthetic media. Among them, natural media refers to the digital media obtained after digitization and coding by special equipment, such as photos taken by digital cameras. Synthetic media refers to the text, music, voice, image and animation generated (synthesized) by computer with computer as a tool and expressed by specific symbols, languages or algorithms, such as animated characters produced by 3D production software.

If divided by constituent elements, it can be divided into single media and multi media. As the name suggests, single media refers to the carrier composed of a single information carrier; Multimedia refers to the forms of expression and transmission of a variety of information carriers.

What we usually call "digital media" generally refers to "multimedia", and "multimedia" is also a technology that is talked about a lot now.

3.3 Classification of Digital Media

(1) Perception refers to the media that can directly act on people's sensory organs and make people produce direct feelings (vision, listening, smell, taste, touch), such as language, music, various images, graphics, animation, text, etc.
(2) Presentation refers to the media artificially researched to transmit sensory media. With the help of this media, sensory media can be stored more effectively or transmitted from one place to another, such as language coding, telegraph code, bar code and language coding, Still and moving image coding, text coding, etc.
(3) A display is a device that displays sensory media. Display media can be divided into two categories. One is input display media, such as speech brief, camera, light pen and keyboard, and the other is output display media, such as speakers, displays and printers. It refers to the media used in communication to generate conversion between electrical signals and sensory media.
(4) Storage media is used to store presentation media, that is, the media that stores the digitized code of sensory media, which is called storage media. For example, magnetic disk, optical disc, magnetic tape, paper, etc. In short, it refers to the carrier used to store certain media.
(5) Transmission media refers to the physical carrier of signal transmission, such as coaxial cable, optical fiber, twisted pair and electromagnetic wave

Digital media technology is the software and hardware technology to realize the representation, recording, processing, storage, transmission, display and management of digital media (sensory media, i.e. text, graphics, image, sound, video image and animation). It is generally divided into digital media representation technology, digital media storage technology, digital media creation technology, digital media display application technology Digital media management technology, etc.

4 Research and Application of Computer Software Teaching Method of Digital Media Art Theory Under Apriori Algorithm

In view of the above, the project teaching method can be used in the actual teaching of various computer software. Different from the tutorials of other disciplines, computer teaching is more practical. The application of project teaching method must run through the whole teaching process of computer software course, and build various knowledge points into multiple small projects, so that students can master the knowledge points by completing one small project by one.

For example, in the teaching of Visual FoxPro 6.0 programming course, before teaching, first let students create their own database through preview, and input the corresponding data into the table created in the library. Finally, submit the previously built database and table to the teacher for review in the form of homework. Although the operation is simple, in the past, the classroom has always been teaching first and then practicing. At first, students still had no way to start. After students' independent study and group discussion with their classmates, many students can establish databases independently. As a result, more and more students have mastered these basic operations. At the same time, the table structure has gradually changed from meaningless English field names and arbitrary data types to meaningful Chinese field names and purposeful data types. In addition to the payroll and students' learning transcripts, some students also integrated their own innovative ideas and created a variety of information tables, such as star information tables, which brightened people's eyes and virtually improved the quality of teaching.

In addition, through students' own active learning, they can not only broaden their horizons of knowledge, but also make their knowledge more solid. More importantly, students have developed good learning habits and greatly improved their learning ability.

5 Conclusion

In conclusion, the research on computer software teaching method of digital media art theory under Apriori algorithm can promote the innovation of teaching mode and provide students with more significant teaching effect, more profound memory, effective learning methods and good learning environment. At the same time, we must give full play to the leading role of teachers, comprehensively show the value orientation of people-oriented and ability-based in modern vocational education, change the quality of classroom teaching, and improve the learning efficiency faster.

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