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Study on Life Education Network Classroom System Under Computer Big Data Technology

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Abstract

The rapid development of computer technology has promoted the continuous construction of the network education system. With the application of computer Big data technology, it has also played an important role in the life network classroom curriculum system. With the help of computers, the development of remote network classroom can be displayed in the form of digital transmission in the computer remote network in the intelligent terminal, and through the announcement information module, teaching resource module The communication module and collaboration module form a new course learning system, which is based on the feature extraction algorithm of the matrix. The system functions include an integrated network structure view, an importance map of edge weights, and a node attribute view. It can be presented to students in the form of diagrams in the system, effectively improving the teaching efficiency of online life education online classrooms.

Keywords: Network Representation Learning Algorithm, Life Education, Network Classroom Teaching System, Computer, Big Data

Introduction

The continuous development of modern society has promoted the leap forward progress of computer technology, and the rapid improvement of computer technology has further improved the construction of network education system. With the continuous development of modern society, computer technology has improved the way of classroom teaching. The teaching form has gone beyond the traditional classroom. With the help of computer Big data technology, the remote network classroom platform has been established, Through this system, students can learn knowledge anytime and anywhere from a long distance, and various teaching resources can also be organized in different categories, becoming an efficient learning tool with the support of computer systems (Miao et al., 2022).

The learning of life education is an abstract course. In the traditional learning process, teachers usually use teaching materials to read aloud and other forms of teaching, but using this method cannot effectively make the knowledge of the course understood and understood by students. The emergence of computer network technology has optimized all

of this, and students can find relevant knowledge of the "big health concept" in digital teaching resource modules, In computer systems, there are various ways to incorporate the abstract concept of "health" into educational policies, such as digital images, videos, and audio. It is presented in the computer network structure view, allowing students to intuitively learn its meaning and knowledge. By using various network structure views, animations, and other forms of teaching materials in the computer system, students can independently learn corresponding knowledge, Thus, the teaching task of the life education network course system was constructed, and the physical and mental health of students was well developed (Zhang & Yang, 2021).

Life Education Network Classroom System Design

System Architecture

The system uses a network application architecture based on Web to reduce the dependence on users. The Client sends a request through the browser to the WEB server, which accesses the database server over the network, and the Web server generates the web page and sends it back to the Client (Yang,2021). Users can easily use the web browser to access and access the resources of the system. From the functional point of view, the life education system is divided into five modules: announcement module, teaching resource module, communication module, cooperation module and management module. Components, Best Practices and More).

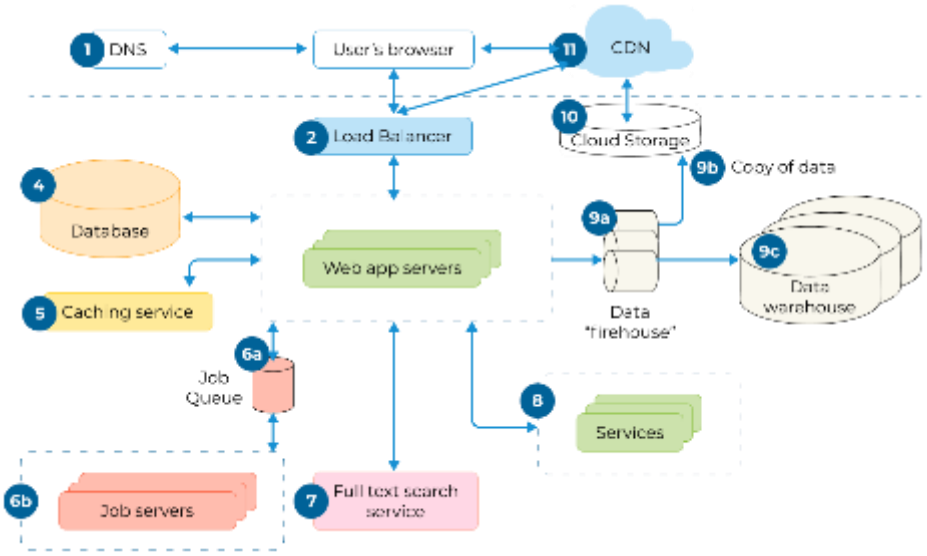

Fig. 1. Architecture of Web-based life education platform

System Function Module Design

Bulletin Module

The announcement module specifically includes two parts: announcement release and announcement management. Its main function is to allow teachers and administrators to publish relevant announcements and management notices in real time, so that other users in the system can see the dynamics of the system at any time.

Learning Materials Module

The system is divided into five functional modules, such as course resource management, learning module management, parent column management, expert column management and life narrative management. The management module is divided into curriculum resource

management, learning module management, parent column management, expert column management and life narrative. The administrator classifies the different learning sections according to the topics of life education (Wang et al.,2022). Teachers, parents, social experts, etc. can publish relevant information in the corresponding sections according to their own authority, and students can also carry out their own learning in each section. "Life narrative" is the narration of one's own life experience. Life story refers to the feelings, experiences, experiences and pursuits of life and life generated by the narrating subject in the process of life growth, which specifically includes the narrating subject's own life experience, life experience, life experience and life pursuit as well as his own perception of others' life experience, experience, experience and pursuit. The "Life Narrative" submodule allows users to post their own life experiences and describe their own lives.

AC Module

The communication part is divided into three sub-items: thematic discussion, user communication and consultation and guidance. User communication includes comment communication at the end of a resource post. When someone posts this resource, others can communicate and discuss it. Advisory services are geared towards college students (Li et al., 2022). It is a platform for college students with psychological problems to consult social experts and answer questions.

Collaboration module

The collaborative mode includes three sub-modules: group communication, internal resource management and task management. The cooperation mode is the cooperation and communication between various interest groups to achieve the sharing and exchange of small thematic resources.

Management Module

Its content includes three sub-modules, which are user management, resource management and database management. The function of the user management sub-module is to grant various permissions to the system administrator, such as user qualification review and permission assignment (Ren et al., 2021). Through the management of resources, the system provides users with the permission to check and recommend the validity of resources. The sub-module of database management is mainly for the management and security backup of all kinds of data table information in the database.

Database E-R Diagram Design

The system uses SQL Server 2010 as the server for data processing. SQL Server 2010 is a new version of SQL Server 2005 released by Microsoft with higher performance. The system has the advantages of high reliability, good availability, programmable and easy to use. ADDNET in SQL Server 2005 will advance access to and manipulation of data sets, making them more scalable and flexible. ADDNET also provides a disconnected architecture, where data is retrieved and stored after the application connects to the database, and then disconnected (Wang,2021). Users can read data directly from the DATASET. This greatly reduces the amount of time each client program spends on database connection resources. SQL Server 2005 also provides an enhanced security feature that will be executed as a view to give users more control over data access. Using SQL Server 2005 simplifies build, deployment, and management, making them more secure, scalable, and stable.

The purpose of the notification module is to allow students to keep abreast of the latest developments in their classes and school life education related resources, activities, etc. Teachers can log in the system, according to their own needs, can add life teaching resources information in the school or class, and can also inform the school or class of life education activities (Chen & Liu,2021). The bulletin information module includes basic functions such as adding new bulletins, deleting original bulletins, and modifying original bulletins. There are many kinds of announcements issued by teachers, such as resource updates, activity announcements, special tips and so on. The administrator can set the categories for publishing. The notification information module is shown in Figure 2 (image cited in A Multiform Multiple Choice Editor Exam Tool Based on HTML Website and Artificial Intelligence) Techniques).

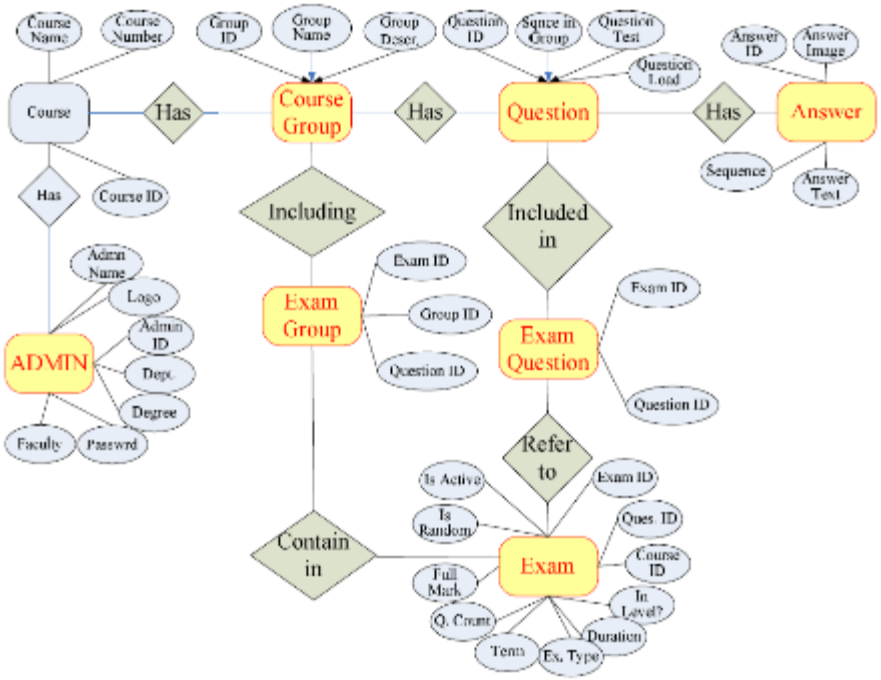

Fig. 2. E-R diagram of bulletin management module data

The resource management system is responsible for adding, modifying, deleting, evaluating, and maintaining resources. These resources can be augmented by registered teachers or administrators. The administrator can set the categories of resources, such as the file attribute categories of resources, such as text, video, and audio, and the content categories of resources, such as security education, mental health education, philosophy education, and legal education. The teacher user selects the category of the resource when adding a course resource (Zhou,2020). You can fill in the keywords and content overview information as required for other users to consult. Modification and deletion of teaching resources that students have joined. Real-time corrections can be made to the added teaching resources. Each user can evaluate the course in the comments and express their own opinion. After Posting some relevant comments, teachers can respond to these comments, and if some comments are excessive, they can delete them. Figure 3 is the E-R curve of the educational data module data.

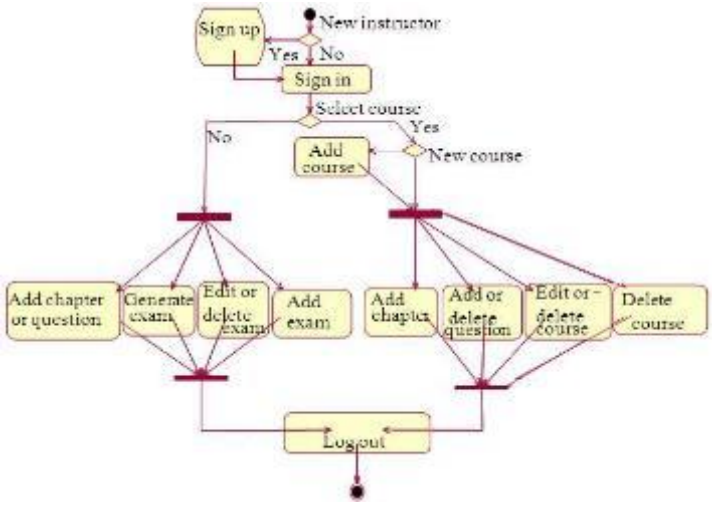

Fig. 3. E-R diagram of teaching resource module data

Life narrative, as an important way to explore personal life education resources, is included in the teaching resource module of life education. Students can publish their own works in the sub-module of life narrative, and narrate their own life experiences, life experiences, life experiences, etc., so as to convey their understanding and cognition of life, themselves, others and society. By reading the material, parents and professionals can better understand the living conditions of children and provide them with more help. Other students can also get emotional inspiration from other people's life experiences.

System Algorithm Design

There are connected edges in the reference Network shown in Figure 4 (image cited in Determining Customer-Focused Product Features through Social Network Analysis). The node pairs (1,2), (1,3) and (1,4) have connecting lines, and the weighting coefficients of the connecting lines are 0.9,0.8 and 0.8, respectively. There is no edge between (2,3), (3,4), and (2,4). It can be assumed that there are connected edges between nodes, that is, that pairs of nodes without connected edges will be connected in the future. In order to estimate the weight of connections between nodes with connected edges and the probability of future connections between nodes without connected edges, MFI algorithm in link prediction is used. MFI method has better stability than other methods, and has the best results under better citation network.

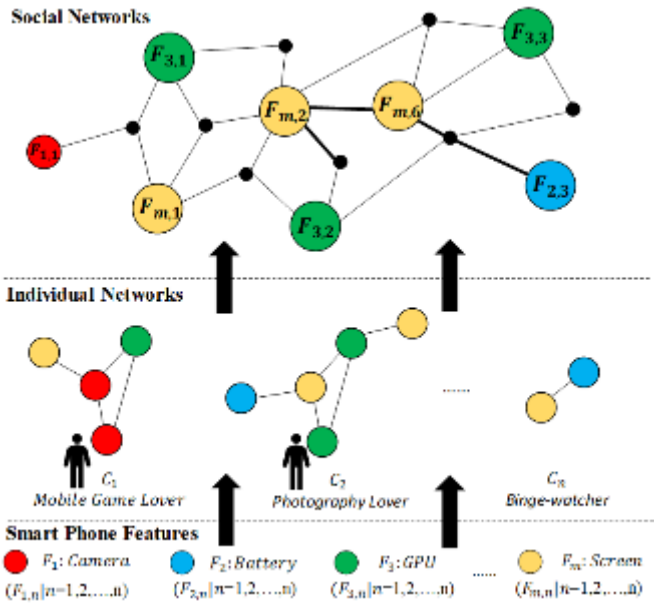

Fig. 4. Network weight view construction process

MFI is proposed based on matrix forest theory and is defined as follows:

$$R = (K + D)^{-1} \quad (1)$$

D is the Laplacian matrix and K is the identity matrix. There may be multiple weighted edges between two nodes. Thus, D can be defined as:

$$d_{xy} = \begin{cases} -\sum_{\mu} \lambda_{xy}^{\mu}, & x \neq y \\ -\sum_{x \neq y} d_{xy}, & x = y \end{cases} \quad (2)$$

λ_{xy}^{μ} is the weight of the edge-on section μ between node u_x and node u_y. The similarity between node u_x and node u_y can be calculated by the following definition. The number of nodes u_x and u_y belonging to the same tree with node u_x as the root node divided by the number of all generating forests in the network with only one root node. The form of MFI with parameters is defined as follows:

$$R = (K + \eta D)^{-1}, \eta > 0 \quad (3)$$

The network weight view given in this paper is obtained by MFI calculation on the basis of link prediction (Xiong & Ge,2021). The matrix of a weight graph can be obtained simply by using the Laplace matrix. Levy et al. used the SGNS model to describe the lexical vector representation of Word2Vec. Determine the SPPMI matrix as follows.

$$SPPMI_{i,j} = \log \frac{N(u_i, \varepsilon_j) \square |E|}{N(u_i) \square N(\varepsilon_j)} - \log n \quad (4)$$

n is the number of negative samples, and E represents the total number of words in the semantic space. $N(u)$ is the frequency of the word u in E, $N(\varepsilon)$ is the frequency of the context ε in E, and $N(u,\varepsilon)$ is the frequency of the (u,ε) pair in E, where the frequency is the co-occurrence frequency. Inspired by Word2Vec matrix method, Yang et al. demonstrate mathematically that the essence of Deep Walk method is the synthesis of transformation matrix. This is called matrix decomposition matrix M. This expression for M is determined to be:

$$M_{ij} = \log \frac{N(u_i, \varepsilon_j)}{N(u_i)} \qquad (5)$$

u_i is defined as a node in the network, and ε_j is defined as the context node of the current node. Deep Walk obtains ε_j through random walks of random walk particles on the network. Given a network $G = (V, E)$, where V is the set of vertices and E is the set of edges, define E to be the set of (u_i, ε_j) pairs generated by random walks of random walk particles on the network. The Deep Walk algorithm needs to customize the step size of the random walk, assuming that the step size is r, then $N(u_i)/|E|$ represents the frequency of node u_i in the (u_i, ε_j) pair. According to the definition of PageRank, $N(u_i)/|E|$ is equal to the PageRank value of node u_i. $2rN(u_i, \varepsilon_j)/N(u_i)$ is the number of times node u_j appears within r steps around node u_i, and r is the random walk step length. The transfer matrix of PageRank is defined as B, B, which is also the storage matrix of $N(u_i)/|E|$. The formula for calculating B is defined as follows:

$$B_{ij} = \begin{cases} 1/e_i, & (i,j) \in O \\ 0 & otherwise \end{cases} \qquad (6)$$

Where e_i represents the degree of node i. MVENR is a new method that combines network structure view, node text view and connected edge weight graph. A fuzzy clustering algorithm is proposed (Maudi,2023). Deep Walk can not only express it according to the network structure, but also expand it into a multi-level heterogeneous network to achieve effective integration of multiple attributes. It has been proved above that the essence of Deep Walk algorithm based on deep learning is decomposition matrix $M = (B + B^2)/2$. Matrix $M = (B + B^2)/2$ is decomposed by SVD algorithm, and the performance of the network representation vector obtained is comparable to that obtained by Deep Walk algorithm. A networked expression method based on deep Walk is proposed. Multi-view information fusion is realized by using matrix multiplication. The information fusion algorithm based on matrix product is better than the single matrix method in recommendation system. An algorithm based on multi-source heterogeneous data is proposed. The detailed structure of the method is shown in Figure 5 (the image is quoted from MVDR Algorithm Based on Estimated Diagonal Loading for Beamforming).

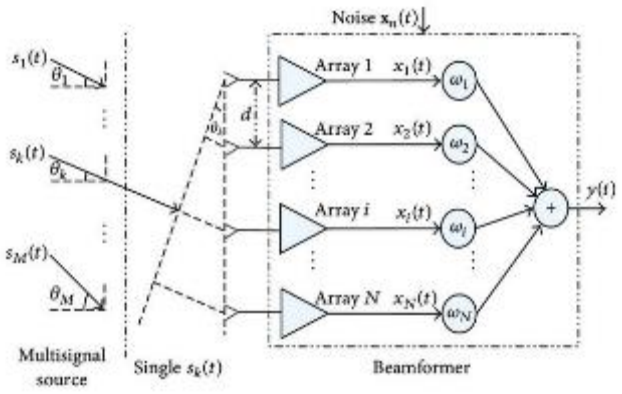

Fig. 5. Block diagram of MVENR algorithm

Conclusion

The development of computer internet technology and its application in teaching have further improved the curriculum training system of schools. From the perspectives of students, parents, and teachers, the use of this remote network course system can benefit. The use of this teaching system can effectively improve traditional teaching methods, make abstract courses more specific, and also greatly improve the quality of teaching, The use of this system has a long-term promoting effect on the learning of knowledge such as life education, and has also improved the quality of students' learning, realizing the positive role of computer technology in promoting human society. Through the visualization of online computer courses and on-site interaction, sharing life knowledge and experience, it is beneficial to promote the goal of students' physical and mental health development.

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