Design of Embedded Knowledge Service Interactive System in University Library Based on MOOC Data Stream Retrieval

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Abstract:In view of this, the idea of applying knowledge graph to MOOC platform resource retrieval is proposed, and a knowledge graph oriented to MOOC data is constructed through entity recognition, relationship analysis, course knowledge point discovery and other methods, and applied to data stream retrieval on embedded devices The system architecture; improved the storage and retrieval efficiency during clustering; designed a clustering algorithm that can capture the temporal characteristics of the skewed distribution of data in a real-time or asynchronous manner. From the fields of scientific research, teaching and social science, a more comprehensive and analyzed the knowledge transfer service from the service process. Finally, it puts forward the embedded knowledge transfer service strategy of university library for the collaborative innovation of industry, university and research.

Keywords: Embedded Knowledge Service, Interactive System， University Library, MOOC Data Stream Retrieval

1. INTRODUCTION

In the early 1980s, American scholars Bharati Pati et al. [1] advocated that university libraries should adhere to the concept of embedded services and provide readers with targeted and timely knowledge services by integrating tangible and intangible resources inside and outside the library [2]. With the further development of library service functions, libraries begin to provide more functions for users, such as consulting services, which are extensions of library service functions. The data stream has the characteristics of timeliness, real-time, infinite and instantaneous [3].

For embedded systems, IEEE (International Institute of Electrical and Electronics Engineers) defines it as: Embedded systems are "devices used to control, monitor, or assist in operating machines and equipment." [4] The reference consultation work originated in the middle of the 19th century. After more than 100 years, the library consultation service has experienced different stages of development and reform, from reference consultation to knowledge consultation. Social hotspot monitoring and Web usage mining are two typical applications of data stream clustering [5].

In social hotspot monitoring, the hotspot events that people care about in different periods will evolve over time, and the events that different groups of people care about in the same period are also different. Features). There are about 2,000 courses online on platforms such as MOOC, XuetangX, and Wisdom Tree in Chinese universities [6]. On the one hand, the huge number of courses greatly enriches the choices of users, but on the other hand, users need to spend a lot of time to find courses that meet their own learning needs [7].

It can improve students' information retrieval and ability to analyze and process information, and cultivate students' interest in scientific research [8]. Combined with the MOOC teaching practice of literature retrieval course, this paper discusses the retrieval practice mode of Chinese periodicals database in literature retrieval course under MOOC environment. Learners receive a certificate of completion or a certificate of excellence by participating in discussions, completing regular quizzes and final exams [9].

This model greatly reduces the barriers for learners to acquire knowledge and completes the flow of knowledge to more learners [10]. Therefore, university libraries urgently need to change the MOOC service ideas and models to meet the personalized and dynamic demand expectations of users. Among them, "MOOC resources embedded service" is becoming a new starting point for university library user services [11]. In the process of industry-university-research collaborative innovation, it is necessary to clarify the goals of scientific and technological innovation and the transformation of accelerated scientific research results, and the two are inseparable. With the continuous expansion of the functions of university libraries, it can provide more powerful support and information support for industry, academia and research [12].

Changes in the information environment and user habits have made the library no longer the main channel for users to obtain information, and a more complex information network has gradually formed [13]. University libraries have massive collection resources and have accumulated rich experience in serving scientific research and information collection. With the rise of MOOC education in Chinese universities, academic circles have achieved fruitful research results in MOOC embedded knowledge services [14]. With the enrichment of book resources, as a library that collects and preserves book materials, it is no longer satisfied with the function of simply preserving materials [15].

In the mid-19th century, the American library circle proposed that librarians should no longer be mere bookkeepers, but should take on more responsibilities. For example, Hu Yongsheng [16] believed that MOOC embedded services have personalized content and high integration. Because of the characteristics of collaboration with the main body, this service should systematically cover users with different disciplinary backgrounds and scientific research capabilities [17].

Design a data flow query system architecture that can be applied to embedded systems. This system is deployed in a wireless network environment [18]. The data stream objects that need to be processed in the system are mainly composed of sensor data streams, and these data streams are all numerical data. The above applications pose challenges to the data stream clustering algorithm, which are mainly manifested in:

(1) it is difficult to obtain prior knowledge about the number and shape of clusters;

(2) high flexibility is required: it is necessary to be able to process data stream clustering at the same time the temporal and skewed distribution characteristics of [19].

2. THE PROPOSED METHODOLOGY

2.1 The MOOC Data Stream Retrieval

Embedded systems can use very few hardware resources, usually in the range of several kB to tens of MB; at the same time, the requirements for real-time performance are very high, which is completely consistent with the real-time performance characteristics of data streams. The main reason why the existing algorithms cannot deal with oblique data in real time is that the density threshold in the algorithm is a constant that depends entirely on prior knowledge and is set in advance. Different from the existing algorithms, this paper defines the temporal density to record the data time. Based on the weight, the density threshold is defined as a function of a time.

Knowledge graphs have already been applied in general fields. However, building a general knowledge graph is technically complex and expensive, and it is usually difficult to specialize in some highly specialized specific fields. But with the distributed deployment of C-DOCSIS, some of the shortcomings of previous DOCSIS will be overcome, especially the impact of cost factors. The most obvious advantage of the Eupneic solution is just low cost. However, the current research on super network is still in the development stage. Although the concept of super network has been put forward, some scholars have also constructed some application models of super network. There is still no exact and unified definition or calculation method for the measurement indicators, and it is not enough to quantitatively reveal the hidden information in the super network.

The capacity-based sliding window model is shown in Figure 1, and the size of the sliding window is fixed. When a data arrives, if the sliding window is not full, it will be added to the sliding window; some cells lose the meaning of participating in clustering due to the large degree of data degradation. In this process, not only the number of clusters occurs At the same time, the distribution of the data is skewed, which means that the local density of clusters in different regions is different. In practical applications, because MOOC data often involve many professional fields terminology and idioms, making the use of common text corpora ineffective.

2.2 The Embedded Knowledge Service in University Libraries

Embed the library's existing general and professional information literacy education courses into the MOOC platform and embed the MOOC resources into the user research team. The embedded services provided by librarians are more represented as knowledge services in terms of content, embedded librarians provide users with not only literature clues, but also knowledge units, countermeasures or solutions that can directly answer users' questions, through collaborative work with users. Regarding the degree parameter index of hypernetworks, Guo Jinli et al. The concepts of point degree, edge degree and composite degree were proposed, and Hu Feng et al. proposed the concepts of node degree, node hyperdegree and hyperedge degree. This paper comprehensively uses network research, literature research, and data mining methods to systematically sort out the embedded service experience of MOOC resources in the member libraries of Russell University Group. First of all, the relevant information disclosed by the sample library is obtained by means of network research, and it is classified and processed. The core of the embedded knowledge transfer service lies in the functionality, timeliness, accuracy and commonality of the service. The smoothness of the service process is closely related to the execution power, which is ultimately matched to the collaborative innovation of industry, university and research institutes. Accurately capture user segmentation data with interdisciplinary characteristics. In the era of media integration, the subject service objects of university libraries not only show multiple cross-border characteristics such as interdisciplinary, inter-professional, and cross-field, but also the user's demand for disciplinary resources has also shifted from single-dimensional knowledge transfer to multi-dimensional academic discovery. The prominent feature of intelligence in the mobile information environment is the fusion of multi-source information, involving a variety of analysis and processing methods. University libraries integrate multi-source information according to the requirements of information fusion.

2.3 The Design of Interactive System for Embedded Knowledge Service in Library

Therefore, in the process of industry-university-research promotion, it is necessary to conduct research according to different project needs. With powerful computer informatization functions, university libraries can effectively establish a variety of subject services, not only provide information flow service models. The embedded knowledge discovery service of university libraries can not only dig valuable knowledge deeply, but also provide decision makers with Intelligence services help companies obtain competitive intelligence, and can also use data modeling, cloud computing, domain ontology and other intelligence analysis methods according to user needs. The MOOC platform and the discipline research team can form a tripartite collaboration alliance.

Subject librarians dynamically track the changing trends of users' subject resource requirements throughout the entire process, and rely on the MOOC platform to provide research teams with fine-grained subject resource support. Embedded knowledge consulting service is an all-round, three-dimensional cross-type active consulting service model, which requires knowledge consulting librarians to show full initiative when providing services to users, so that users can be at any time, any place, through a variety of methods. A ubiquitous consulting service model obtained by means of multi-data stream connection is to extract data units with the same value in columns with the same attributes after selecting and projecting a single data stream.

The connection operation is implemented through a linked list. Whenever a data stream participates in the connection, the result of the connection is added to the linked list. Supernodes and hyperedges are a two-modular network,

supernodes belong to some hyperedges, and a hyperedge owns some supernodes. In this two-modular network, the degree centrality of a super-point is the number of super-edges to which this point belongs. On the one hand, the promotion of subject resource navigation services can dynamically meet the needs of users in teaching and research. First, with the goal of enhancing the reliability and compatibility of subject resource navigation services, a subject data navigation system based on the MOOC platform has been created.

3. CONCLUSIONS

This paper designs and implements the architecture of a data stream retrieval system. The system adopts a relatively simplified method to realize some basic operations of data stream query and tests the operation of the system on the embedded device, and realizes the effective filtering of data. The fields of scientific research, teaching, and social sciences are repositioned, and the cost-effective value of knowledge transfer services is improved through a smooth service process, and then the knowledge transfer services of university libraries are embedded in all aspects of production, education and research. Based on the MOOC embedded concept, the practical direction of innovating the knowledge service of the university library is to combine the value attribute and the tool attribute of the MOOC service, and reshape the competitive advantage of the knowledge service of the university library by better exerting the information guarantee efficiency of the MOOC resources.

4. ACKNOWLEDGEMENT

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