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Research on the construction and application of ideological and political education knowledge graph based on artificial intelligence

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Abstract: Technologies such as machine learning and big data analysis of artificial intelligence have made it possible for ideological and political education to collect data accurately, monitor the process intelligently and deliver resources in a personalized way, forming a crucial path to respond to the education digitalization strategy and improve the effectiveness of ideological and political education. However, the current integration of the two is still plagued by problems such as insufficient depth, single application scenarios, weak technical adaptability and lack of ethical prevention and control. How to construct a scientific integration mechanism and innovative application paths has become an urgent subject for the high-quality development of ideological and political education.

Keywords: ideological and political education; knowledge graph; artificial intelligence; archives management

1 Core advantages and major problems of AI in the construction of ideological and political education knowledge graph

1.1 Core advantages

First, it improves the precision of ideological and political education. Relying on artificial intelligence technology, the knowledge graph accurately captures the individual differences and group characteristics of young students after comprehensive data collection and analysis. With the construction of personalized learning graphs and resource recommendation, students can absorb optimized ideological and political education content according to their actual needs, thus enhancing the effectiveness of moral education through ideological and political guidance.

Second, it optimizes the organization mode of ideological and political education resources. By virtue of the autonomous screening and intelligent response functions of artificial intelligence, the knowledge graph of ideological and political education archives transforms fragmented ideological and political education resources into a structured and visualized semantic network, which clearly presents the internal logic among knowledge points and helps students construct a systematic knowledge system [1].

Third, it enhances the management efficiency of ideological and political education. The automatic processing and dynamic monitoring of intelligent systems replace the cumbersome manual work such as questionnaire sorting and resource classification in traditional modes, comprehensively improving the efficiency and scientificity of ideological and political education management.

1.2 Major problems

Data Level: Prominent difficulties in data quality and sharing. The data sources of ideological and political education archives are scattered, covering textbooks, documents, student records, practical materials and other types of data, with non-uniform formats and uneven quality, which increases the difficulty of data preprocessing. Meanwhile, the mechanism for sharing archival data across departments and institutions is imperfect, resulting in a prominent phenomenon of data silos, which restricts the coverage and integrity of the knowledge graph. In addition, ideological and political education archival data contain a large amount of students' private information, imposing great pressure on data security and privacy protection.

Technical Level: Key links to be broken through. There is a lack of unified standards for ontology design, and the knowledge graph systems constructed by different institutions vary greatly, leading to insufficient interoperability and hindering cross-institutional collaborative application. The accuracy and efficiency of knowledge extraction need to be improved, with inadequate ability to extract professional terms and tacit knowledge in the field of ideological and political education.

Research and Collaboration Level: Imperfect collaborative mechanism. Academic research in this field presents a decentralized feature, with loose cooperation among researchers and research institutions, and no cohesive research groups have been formed yet. The technical collaboration between universities and enterprises is insufficient, with a tendency of emphasizing theory over practice. Some research results are divorced from actual application needs, resulting in low transformation efficiency [2].

2 Potential risks in the construction of ideological and political education knowledge graph

First, the risk of technical ethics. The black box nature of artificial intelligence algorithms may lead to deviations in personalized recommendation. Over-reliance on data-driven decision-making may ignore students' emotional needs and value guidance, running counter to the essential goal of ideological and political education.

Second, the risk of data security. Ideological and political education archival data contain a large amount of sensitive information. Imperfect encryption technology and access control mechanisms may lead to data leakage and tampering, infringing on students' privacy and legitimate rights and interests.

Third, the risk of technological dependence. Excessive reliance on intelligent technologies such as knowledge graphs may weaken the dominant role of teachers in ideological and political education, resulting in insufficient humanistic care in moral education and affecting the humanistic value of ideological and political education.

3 Specific measures for the construction of ideological and political education knowledge graph

3.1 Improve the data governance system and consolidate the basic guarantee

Establish standardized data norms. Formulate unified standards for the collection, preprocessing and storage of ideological and political education archival data, clarify data formats, metadata requirements and quality evaluation indicators, and build a dynamic data quality monitoring system. Improve data quality through cleaning, deduplication, standardization and other operations.

Improve the data sharing and security mechanism. Build a cross-departmental and cross-institutional sharing platform for ideological and political education archival data, improve the division of rights and responsibilities and interest coordination mechanism for data sharing, and break data silos. Meanwhile, adopt technologies such as federated learning to protect data privacy, realize data traceability and anti-tampering with blockchain technology, and strengthen multi-level access control and dynamic permission management to ensure the compliant utilization of data.

Construct a high-quality data resource library. Integrate school-based ideological and political education archival resources and standardized public resources, set up a knowledge base construction team involving full-time teachers, ideological and political educators and peer students, and promote the storage and update of high-quality data such as typical cases of ideological and political education and red cultural resources.

3.2 Break through the bottleneck of core technologies and enhance technical support capacity

Promote the standardization of ontology design. Jointly formulate the ontology standards in the field of ideological and political education with universities and research institutions, clarify the core elements of archival entities, attributes and relationships, and improve the interoperability and cross-institutional collaborative capacity of knowledge graphs.

Optimize knowledge extraction and update technologies. For professional knowledge and tacit knowledge in the field of ideological and political education, optimize natural language processing models to improve the accuracy of entity recognition and relation extraction. Establish an incremental update mechanism for knowledge graphs, and dynamically update knowledge content in conjunction with the latest policy documents and current hot topics to ensure the timeliness of knowledge.

Strengthen multimodal fusion and interpretability design. Promote the research and development of semantic alignment technology for multimodal data such as text, images, audio and video, and expand the application scenarios of knowledge graphs.

3.3 Improve the collaborative innovation mechanism and promote the integration of research and practice

Promote universities, research institutions and science and technology enterprises to establish cooperation mechanisms, set up interdisciplinary research teams, focus on technical bottlenecks and practical needs to carry out joint research, and accelerate the transformation and application of research results.

Strengthen academic exchanges and resource sharing. Hold regular seminars and achievement exhibitions on the construction of ideological and political education knowledge graphs, build an academic resource sharing platform, promote collaboration among researchers and research institutions, form cohesive research groups, and enhance the systematicness and depth of research.

3.4 Expand and deepen application scenarios and strengthen the function of value guidance

Promote the application of knowledge graphs in multiple scenarios such as primary and secondary school ideological and political education, community ideological and political education and enterprise ideological and political training, develop targeted application modules, and improve the comprehensive coverage of ideological and political education.

Deepen the application depth of core scenarios. On the basis of precision teaching, develop in-depth application modules such as value guidance and emotional counseling, explore the value connotation of ideological and political content through knowledge graphs, and carry out personalized guidance combined with students' ideological dynamics.

3.5 Strengthen risk prevention and control and ethical norms

Set up an ethics review committee composed of ideological and political experts, technical experts and legal experts to conduct ethical evaluation on the whole process of knowledge graph construction and application and guard against the risk of technology abuse.

Improve technical ethical norms. Clarify the ethical boundaries of artificial intelligence application in ideological and political education, avoid algorithmic bias and excessive data collection, and ensure that technical application conforms to the fundamental goal of fostering morality and cultivating people.

Improve the technical literacy of teachers and students. Carry out technical application training for ideological and political educators to enhance their ability to master knowledge graph technology and identify risks; Promote data privacy

protection literacy among students and guide them to correctly understand and use intelligent educational tools.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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