

Research on the Collaborative Governance Model of AI Agents for University Network Public Opinion under the Concept of Management-Education Integration

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Abstract: There are many problems in the governance of university network public opinion, such as information fragmentation, carrier diversity and lack of cooperation. The structure of the old management model is too large and general; thus, it cannot respond promptly. In light of the concept of management-education integration, this paper studies the collaborative model of AI agents in the governance of public opinion on university networks and systematically analyzes it from the perspectives of theory, structure, mechanism and operation. Based on the above research, management-education integration is closely related to technological empowerment, and thus, an algorithm-based multi-stakeholder collaborative framework has been established; a four-in-one guarantee system for departmental cooperation, research-practice cooperation, human-AI collaboration and regulatory cooperation has been built, the three-in-one operating model of integrating digital-intelligent perception with educational recognition, collaborative regulation and flexible guidance has been optimised, and efficacy evaluation and model iteration have also been carried out. Based on the above research, AI agents are now being employed to organise the large amount of online public opinion and help generate various educational materials in coordination with people.

Keywords: Management-education integration, AI agents, university network public opinion, collaborative governance, operating model

Introduction

As a place for students to express themselves freely, the university cyberspace has accumulated a large amount of public opinion data that reveals the actual needs of students in their studies, social life, values, etc., and can be used to understand the ideological trends among students. With the development of platforms and the appearance of many other kinds of expressions, traditional manual monitoring can no longer cover all the deep structures of online information. Due to poor communication and coordination among all the departments of the government, these problems have not been addressed and education has been delayed. AI agents have good skills in semantics, emotion detection and trend prediction, so they can be used to solve these problems. In accordance with the concept of management-education integration, this paper will systematically study both the theoretical foundation and the practical path for applying AI agents in the public opinion governance of the university network, build a collaborative governance model based on technology and education, provide theoretical support, and improve the overall effectiveness of university cyberspace governance.

1. The Connotative Evolution and Management Problems of University Network Public Opinion

1.1 Definition of Core Concepts

The idea of Management-Education Integration in universities is a general way of using the structure and organisation of the institution to promote the all-round development of students. At the foundation of artificial intelligence, an agent is a type of program that can sense its environment, independently choose actions, and then carry out those actions. Based on the reasons mentioned above,

this paper will focus on building a software agent system for public opinion management in university networks that can independently carry out all kinds of operations, such as collecting data from all places, determining the overall direction of public opinion, predicting changes in this direction through algorithms, and working with other intelligent systems or administrators. Network public opinion refers to the emotions, attitudes and views of the public that arise from particular events and spread in cyberspace. Given the specific conditions of universities, the contents will mainly cover teaching and administration, campus emergencies, the rights and interests of teachers and students, and the projection of social hot topics in the campus community. The first reason for adding the technical features of agents to the management of public opinion on the network is to change from passive response to active awareness in the mode of management and to make decisions based on data rather than experience; thus, a rational foundation for technology-aided educational management has been laid^[1].

1.2 Characteristics of University Network Public Opinion and Its Educational Significance

The public's opinion of the university network has some specific features that differ from those of the general public, and these attributes form the basis for a strong association with educational work. Carriers of public opinion are spread out in many places, such as traditional campus forums and discussion boards, as well as social media platforms like Weibo, WeChat, Xiaohongshu and Douyin; thus, they have formed a cross-platform, multi-dimensional communication network. These are the main places where students talk about their ideas and feelings every day. The spread of public opinion is wide; as university faculty and students are close to one another, problems at the school are likely to attract the attention of the public. Once the public's opinion has been formed, it can spread rapidly both on and off campus in a short time, and the development process of this spread often shows the collective emotions and values of the student body. The extent of the impact of public opinion can be seen in the cases of campus order, student development and damage to the institution's reputation. What is in the content of public opinion is not only information but also real confusions and basic needs that students have in their studies, relationships with others, values, etc. Therefore, the public's perception of the network can be taken as an index for grasping the ideological climate and development requirements of students, and it can be applied in education.

1.3 The Failure of the Traditional Management Model and the Inevitability of Agent Intervention

The attributes of the public opinion in the university network mentioned above have resulted in structural defects in the response efficiency of the traditional management model. Traditional management methods are based on manual observation and experience-based judgment, so it is difficult to cover all areas and all platforms at the level of information collection; a large amount of public opinion data spread across various social media platforms and instant messaging groups is still out of reach of monitoring. At the level of analysis and judgment, the manual processing method has certain cognitive limitations in the face of a large amount of unstructured data; thus, the analytical results are often only superficial descriptions of emotions and fail to grasp the deep structure and evolutionary logic of public opinion. At the level of emergency response, the hierarchical decision-making process and information dissemination channel are too slow to keep up with the speed of change in public opinion, and some opportunities for good intervention are lost. The reasons for the above deficiencies are that the traditional way of management cannot keep up with the digital characteristics of network public opinion, and agent technology is well-suited to solve this problem. Agents are fully aware of Cyberspace and will automatically collect and process all kinds of information; they can penetrate the concealment and diversity of online expressions through sentiment analysis and semantic understanding, efficiently turn this information into decisions in cooperation with management staff, and so on. The intervention will not be an addition to the old management system; instead, it will be all-encompassing reform of the management model to achieve the educational objectives.

2. Agent-Empowered University Public Opinion Management: Goals and Technical Support

2.1 The Four Basic Goals of Agent-Based Collaborative Governance

The embedding agent in the public opinion management system of the university shows that the management goal has changed. First of all, all kinds of monitoring should be carried out by integrating

and analysing various sources of diverse data to obtain continuous, all-encompassing knowledge of the campus cyberspace around the clock and cover all places where students actively participate in their daily lives under the management scope. The purpose of Agile emergency response is to create a human-agent cooperative response system that can offer early warnings and preliminary situation analysis in real time by means of agents, organise information for management staff at the terminal, and reduce the lag in addressing changes in public opinion. Intelligent analysis and judgment aim to move the form of management away from human experience and towards a combination of human expertise and technology. Agents can use technical means to obtain some analysis results and make up for the deficiencies of personal experience, such as sentiment polarity analysis, identification of opinion clusters and reconstruction of communication paths; thus, educational administrators can gain a better understanding of the ideological sentiment of the students. Strategic Support expands the range of management to that of institutional development. Based on the long-term accumulation of data, agents will provide data-driven recommendations to analyze changes in the ideological thoughts of students, determine the effect of management policies on communication, monitor the institution's reputation, and improve the entire system of public opinion management in university education^[2].

2.2 Main Technical Components of Agents

In order to process the information of public opinion effectively, agents need to be able to decompose multimodal information well, and the technical foundation for this is the combination of sentiment classification models and multi-level analysis tools. As the main processing unit for sentiment classification, a particular sentiment lexicon and a classification algorithm need to be developed that are tailored to the university environment and can handle the many symbolic expressions of emotions in online communication. Lexical analysis is employed to extract information about the strength of emotion from topic words, mention symbols, emojis and some punctuation marks. At the level of sentence analysis, the model can determine the direction and degree of subjectivity for a single sentence to find emotional expressions in language. Based on the analysis of the document, the model can determine the general mood and the spread of the opinions in that document. At the level of image analysis, the model can recognize emotions in pictures, as well as memes, posters and screenshots, and explore the communication ecology of all these types of visual expressions. Divide it into small and large sections, convert the text into images step by step, and then agents can learn about a public opinion entity in detail and obtain organised data for the next steps of analysis, judgement and decision-making.

3. Establish a Collaborative Public Opinion Management Mechanism

3.1 Deepening the Understanding of the Mechanism: Breaking Down Departmental Silos

Now that agent technology has been used to organise public opinion on university networks, new forms of organisation cooperation have begun to emerge. To improve the understanding of the mechanism and build a modern management concept for data-driven governance at the university level, it is necessary to expand the scope of network public opinion management from that of a single department to that of the entire educational system. The Aim of Mechanism Coordination is to strengthen the integration of functions and data sharing among all departments of the government. The information dissemination function of the Publicity Department, the ideological guidance function of the Student Affairs Office, the order maintenance function of the Security Department, and the technical support function of the Information Technology Office all need to be combined into a single cooperative system. Break down the long-standing operational boundaries and data barriers among departments by establishing cross-departmental data-sharing standards and joint-meeting mechanisms, and thus, the public opinion information and management resources that were originally scattered in various systems can be aggregated and utilised on a single platform. Collaborative restructuring at the organisational level will create a good institutional environment for the good operation of agent technology, and the technical system and the organisational system will be able to cooperate effectively to achieve this goal.

3.2 Improve Technology and Research-Practice Collaboration in the Campus

The application of agent technology in the laboratory should be in line with the actual conditions of school administration and teaching. In collaboration with technology research and development,

various joint research and development activities have been carried out by universities, technology enterprises and research institutions, etc., to build agent tools and application platforms that meet the needs of the university environment better. Given that the conditions of campus life are different, the management subjects and educational goals will also be different from those outside of school. Since the public opinion monitoring technology cannot be directly used for the university, some localisation of the sentiment lexicon, classification model and analysis-judgment rules is necessary. At the start of the development of the technology and in the course of its application, research and practice collaboration have been carried out; feedback from front-line managers will be used to continuously improve the algorithm so that it can keep up with changes in the form of campus public opinion. An organised communication system should be built among technology providers and educational demand-side units to keep track of the contextuality of agent tools, and thus the development of technology should aim to promote the achievement of educational goals rather than being driven by the internal logic of technology^[3].

3.3 Improving the Digital Literacy and Human-Agent Collaboration Abilities of Frontline Staff

Although agents have begun to appear, the main role of educational administrators in public opinion management has not changed; rather, new demands for their abilities have emerged. The goal of boosting digital literacy is to cover all faculty and students in the community, help them learn to distinguish between good and bad online, be good digital citizens, and thus create a positive online environment for students at the college. One of the purposes of the technology for front-line administrators, such as academic advisors and student affairs staff, should be to cultivate a sense of human-agent cooperation. Administrators should have a good understanding of the technical foundation and functions of agents, accurately interpret the analysis reports produced by intelligent systems, distinguish between reliable information and potential bias in these reports, integrate the structured data provided by technology with their own deep understanding of the student body, and then make judgments based on both data and humanistic insight. Administrators should avoid the two extremes of relying too much on agents to the extent that they no longer use their own professional judgment and agency, and do not fully consider the auxiliary value of intelligent systems due to a lack of technology literacy. Systematic training will be organised to cultivate this sense of balance in the students.

3.4 Coordination of Ethics, Privacy and Regulation: Protecting Students' Rights and Interests

There are issues of privacy protection and ethics in the collection, storage and analysis of students' online expression data by means of agent technology. At all times during the Design and Development of agents, be mindful of the ethics of information privacy, set clear boundaries and purposes for collecting information from the source of data acquisition, ensure that technological operations do not exceed the baseline for respecting students' personal privacy, etc. Technical means should be employed to desensitize and anonymise the sensitive data containing students' personal information so that no identifying features of individuals are revealed, and thus, the analysis of public opinion can be based on aggregated group data rather than tracking the behaviour of individual students. Coordination and Regulation refer to the joint effort of promoting development and ensuring good governance. There should be neither excessive risk aversion in the development of technological innovation and management applications, nor should the basic protection of students' rights and interests be neglected in the pursuit of technological efficiency. The operation of agent systems should be in line with the principle of minimal necessity for data collection and the principle of contextual limitation on the use of information. By combining the logic of technology with the logic of ethics, technological innovation and humanistic care in education can be integrated to achieve the goal of education^[4].

4. Operational Model of AI Agent Collaborative Governance with an Educational Orientation

4.1 Digital-Intelligent Perception and Educational Recognition Model

First, one should be familiar with the campus cyberspace and know what can be learned from it. Deep learning algorithms are continually used to collect all kinds of information from various social media platforms and obtain early indications of changes in people's emotions, topics, and differences in opinions based on data in places such as forums, community discussions, comments, etc. The dimension of perception is not only the shallow logic of keyword activation but also includes the analysis of expression style, emotional tone and interaction patterns. Collaborative processing of

multimodal data can address the formal differences among text, images, audio and video; semantic associations among different types of information can be established, and a complete understanding of the context of public opinion formation can be achieved. Based on the above, the main content of this paper is educational recognition. Organise the raw data in line with the educational goals and filter out many problems that are not suitable for education, such as ambiguous areas in value cognition, potential directions for collective emotion, dynamic tensions in group relationships, and the construction process of identity. Based on the above division, agents will turn public opinion events into ideological maps that can be understood by educational subjects, and technology will be employed to inform decisions at the grassroots level directly.

4.2 Coordinated Regulation and Flexible Guidance Linkage Model

Given that there are many ways to express public opinion on the Internet, the operating model will build a joint regulation and guidance system. When an agent finds a problem in public opinion, it will consider various factors, such as the intensity of emotions, the speed of spread, values in conflict, group participation, etc., and then automatically trigger a corresponding response level. Expressions that may disrupt the network order will be regulated and cooperated with, and technical means such as content distribution and heat regulation will be employed to curb the spread of such information. At different times, according to how serious the problems are at that time, all sorts of regulations and interventions are introduced. At the same time, there is also a regulation function that is not closely monitored. For public opinion problems in schools that cause ideological confusion, emotions or identity anxiety among students, agents consider them to be high-priority objects for educational intervention and inform the education department of all relevant information on the nature and development of such problems. With the help of intelligent support, educational courses can be inspired by dialogue and issue reframing to show people how to view problems in life and turn those problems into learning materials for values. Regulation and guidance are related parts of the system and their relative importance and forms of expression change according to changes in public opinion^[5].

4.3 Educational Effectiveness Assessment and Model Iteration Mechanism

With the continuous improvement of the operating mode, some deficiencies in education need to be corrected based on feedback. Take some leading measures, continue to pay attention to what is happening in Cyberspace, and carry out time-series analysis of changes in emotions and group comparisons of changes in opinions and cognitions among the subjects in this study. Based on the changes in the data before and after the intervention, many indices of effectiveness have been obtained, such as how much the problems have decreased, whether the direction of discussion has changed positively, how much students' rational expression has improved, and the trend in their clarity of value cognition. Determine how far the goals of the governance measures have been achieved. At the same time, during the course of assessment, one can also learn about other effects that have resulted from the leading behaviour of governance. According to the results of the evaluation, the government will make some improvements to the model in stages. Collect all the data that will be obtained during the course of governance for the intelligent system, build a machine learning model based on this data, and then quickly find similar problems and deal with them effectively. Based on the cognitive support provided by intelligent evaluation, educational subjects can determine whether the leading strategy is suitable and when to intervene; through experience, they will update the rule base in the system to build a good relationship, and both the technical system and the educational subjects will be co-evolved^[6].

Conclusion

The following four parts will present the theoretical basis, structural design, mechanism construction and operating model of the collaborative governance model of AI agents for public opinion in university networks based on the concept of management-education integration. The theoretical foundation of this paper offers a digital extension of the concept of management-education integration, explains the logic of technological empowerment in changing management goals into guiding signals, and shows the value foundation for turning public opinion into educational resources. First of all, we will construct an algorithm-based multi-stakeholder collaborative framework, change the form of digital presence for stakeholders, and establish a cross-stakeholder collaboration mechanism for data sharing and task scheduling. At the level of mechanisms, this paper puts forward a four-in-one guarantee system to cover comprehension and mechanism coordination, technology and

research-practice collaboration, digital literacy and human-agent collaboration, and ethics, privacy and regulatory coordination. At the level of operation, this paper puts forward a three-in-one operating model that integrates digital-intelligent perception with educational recognition, coordinated regulation and flexible guidance, efficacy evaluation and model iteration, etc., to achieve the harmony of governance processes and educational goals. In the future, we will improve the accuracy of the algorithm for detecting implicit value appeals, explore how to adaptively apply the model to all kinds of universities, address new problems caused by the spread of generative artificial intelligence, and continue to improve the educational effect through dynamic adjustment.

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