



Application of New Media Technology in the Context of Artificial Intelligence - A Case Study of Guancha Two Sessions

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Abstract. The traditional news industry has changed its original news production methods and patterns under the impact of the Internet era. To break through the news dilemma brought about by the traditional media, the news industry has extensively combined artificial intelligence technology to promote the advent of the era of intelligent media. This paper will take CCTV's "Guancha Two Sessions" as an example and try to dig into the current situation of news engagement in the context of artificial intelligence and the logical chain behind the dilemma in an attempt to break through the hostile media ecological impact brought about by technology and build a new public opinion ecology.

Keywords: Data cleaning · news engagement · feature selection · ethical risk

1 Introduction

The application of artificial intelligence in the news industry was first seen by Thomson in the United States, with robots writing financial news as the primary method, which can significantly shorten the time of single news production, save the human and material costs of news production, and improve the efficiency of news production. Later, a piece of news writing robot program developed by Northwestern University in 2009 was able to report on sports events in a short time. In early 2015 an AI-produced news story published by the Associated Press, "Apple breaks Wall Street's first-quarter expectations", successfully grabbed headlines. In China, artificial intelligence was first used in the news industry by Tencent. For example, Tencent Finance released the news "August CPI rises 2.0% year-on-year to a new 12-month high" on 10 September 2015. However, as the application of AI in the news industry deepens, the timeliness level alone is no longer enough for the news production industry, and new requirements are being put forward for quality. Artificial intelligence in the news industry is no longer limited to the distribution side but also to the production side as the media moves towards the threshold of automation. News apps such as Today's Headlines have also sprung up. It is worth mentioning that while users are making news choices, they are also reshaping

their attributes in the AI system, with each individual using AI while also mapping their sense of self as a subject to some degree. Consideration of the application of AI to journalism should not only be at the technical level but also the legal and ethical level to truly serve people. The most recent example of the application of AI in journalism in China is the AI programme “Guancha Two Sessions”, which covers the two sessions of the National People’s Congress. Based on Guan Wang, a financial commentator, China Central Television’s Audiovisual New Media Centre has created a simulated anchor with a supernatural voice and expressions, “AI Guan Wang”. When reporting news about the two sessions, the AI anchor complements the natural anchor to achieve a multi-faceted and multi-level analysis of the news, i.e. in the actual broadcast, the AI anchor mainly introduces background data and analyses the data [1].

In contrast, the real anchor mainly discusses topics with emotional value, such as people’s livelihood, presenting a strong sense of hierarchy and gradient in the reporting. The emergence of “Guancha Two Sessions” has transformed and upgraded the structure of traditional news programmes, providing a visualisation service for news information that can better convey news values while reshaping the news production process and promoting quality and efficient user-produced content. However, the questions of whether “Guancha Two Sessions” is an opportunity to transform the traditional news industry, how to define the legal risks and moral and ethical boundaries behind it, and how to use it to build a new model of artificial intelligence news production, all need to be discussed and resolved.

2 An Application of New Media Technology in the Example of Guancha Two Sessions

2.1 Text Keywords

The Guan Wang anchor for selecting news text content is mainly in the form of features. The general process is as follows: after the training set for a document that has been pre-processed, Guan Wang Anchor uses a feature selection calculation function to evaluate the original feature set. This evaluation is descended, and the weights of each feature are calculated to express the contribution of the element to the overall assessment [2].

For feature selection, there are several methods.

2.1.1 Frequency Statistics

Frequency statistics are used to calculate the frequency of occurrence of text words, and the weights are calculated from the frequency to show the contribution rate. For example, the higher the importance of the word, the greater the contribution rate to the text as a whole, i.e. the more likely it is to describe the entire text. By analysing the frequency of words in the text during the two sessions and summarising high-frequency words, the anchor Guan Wang was able to quickly grasp the key points of the session and promptly condense the general expression of the core issues of the session, thus ensuring the maximum effectiveness of the broadcast. However, relying on frequency alone to determine contribution is somewhat biased, as it is challenging to decide on the contribution size of high-frequency words if they are evenly distributed across the

features. So the statistics on word frequency are more on a macro level, but for some exceptional cases, such as when some low-frequency words are keywords in the text, it is impossible to fill this gap. This is why “Guancha Two Sessions” is complemented by a dual format of AI anchors and live anchors to ensure accuracy while maximising multi-level and comprehensive coverage of the two sessions.

2.1.2 Information Gain

Information gain technology is widely used in the computer field, and the purpose of Guan Wang’s broadcast is to analyse the information capacity behind the features, calculate the information contained in the category through a certain logic of rules, and judge the importance of the report by the size of the information content. The equation then shows the mathematical logic of calculating the information gained; for a given text x , the larger the final value obtained, the more critical and informative the information is. In contrast, Guan Wang’s anchor uses the information gain method, complemented by frequency statistics, to calculate the weight of the meeting information on the day of the two sessions and find the key and essential information by arranging it in descending order to make the targeted news broadcasts. This enables the broadcast of the important news and enables the broadcast of the news to the people during the two sessions in real-time so that appropriate adjustments can be made.

$$\begin{aligned}
 IG(x) = & - \sum_{i=1}^n P(c_i) \log P(c_i) + \\
 & P(x) \sum_{i=1}^n P(c_i|x) \log P(c_i|x) + \\
 & P(\bar{x}) \sum_{i=1}^n P(c_i|\bar{x}) \log P(c_i|\bar{x})
 \end{aligned} \tag{1}$$

2.2 Big Data Cleaning Technology

During the two sessions, the amount of information is in an explosive state. It is imperative to filter and clean the information. In this process, we are often faced with data that cannot be used directly due to its format and some “dirty data”, i.e. data that has been artificially altered, data that contains false information, data from unknown sources, duplicate data, incomplete data, etc., which all add to the challenge of selecting information data. The purpose of big data cleansing technology is to make a reasonable selection of these data, to convert the format and to achieve the purpose of cleansing. Guan Wang Anchor then uses this technology to cleanse irrelevant and unusable data to ensure that the news content broadcast is accurate [3].

2.2.1 Converting Data Formats

Before broadcasting imported data, Guan Wang anchors need to convert the data to a format that cannot be used directly, such as video and audio. Computer-readable files such as JSON, XML, CSV, etc., and computer-unreadable files such as Word, HTML, PDF, etc., require us to convert the data format to meet the needs. For example, in “Guancha Two Sessions”, the AI anchor conducts a comprehensive analysis of financial

data. Still, this data is saved in PDF form and cannot be directly analysed by the Guan Wang anchor. This shows that the file format problem must be solved before data analysis can be carried out. Otherwise, it won't be easy to move forward.

2.2.2 Cleaning Data

The primary data we get cannot be directly quoted, especially in an information explosion platform like the two sessions. Guan Wang anchor is significant for data cleaning and selection because the first-hand data is often not structured, and there is no specific law. For example, the first-hand data from the anchor may be news information provided by journalists in the field, or some web pages, which cannot be merged directly and may face invalid or missing values, which is highly harmful to the accuracy of the report. This requires a powerful ability to clean data, in this case, dirty data. Dirty data is data outside the given scope of the source system or the size of the content. Such data is usually filtered, supplemented, corrected, deleted, transformed, etc. When cleaning data, the following steps need to be met to ensure the maximum use of the information. For example, when Guan Wang is broadcasting the news of the two sessions of the National People's Congress when the information is missing, he needs to ask the reporter to confirm the information to ensure the authenticity of the news report. For example, the constant emphasis on the economic situation in the two sessions, where repeated data is to strengthen the risk perception, then there is no need to delete it. This is where the artificial anchor and AI anchor complement each other, saving workforce and resources to the greatest extent and improving the report's efficiency, professionalism, and accuracy [4].

2.3 Production of Virtual AI Process

2.3.1 Character Images

Seventy sets of high-precision scanning systems form the scanning matrix to scan the real-life Guan Wang shape to create a very fine 3 million faceted polyhedron. The acquisition process is divided into three phases. In the first phase, the real-life Guan Wang is imperfect and imaged in grey as it is shyly clothed. The second phase was a high precision material scan to 16 k, 400 million pixels, which applied skin and clothing material to the grey person. The final stage refines the hair and skin textures, global reflection tracking, and binding normals. This scanned a static 3D model. Combined with multimodal information such as voice and image for joint modelling training, a life-like, super-simulated AI doppelganger model can be generated. Unlike existing AI avatars that mainly present the front, this CCTV anchor is a 3D AI model that has been presented side-by-side.

2.3.2 Character Movement and Expression Learning

Neural networks and machine learning techniques are used. The real Guan Wang recorded around four thousand voice videos, which, together with the previous Guan Wang's programme library, were mashed up over 80 h and fed to the robot to learn for 500 h. In this way, the AI Guan Wang formed a database of the real Guan Wang's

voice, accent and posture, on top of which it continued to learn the unprocessed real Guan Wang's programmes. After forming a model, a live video is then given face key-point detection, face feature extraction, face reconstruction, lip recognition, and emotion migration to supervise the model. By capturing the host's supernatural voice, millisecond micro-expressions and full temporal movements, after binding micro-expressions and completing habitual temporal activities simultaneously, the virtual number wise person can achieve super supernatural simulation. It is worth noting that the AI Guan Wang does not use real people for motion tracking technology, as motion capture is too labour-intensive to achieve the goal of 24-h continuous broadcasting. And as it was used for the two sessions, AI Guan Wang subtracted by deliberately cutting out its expressions. After this process, the AI avatars could read the script as if they were real people when they were given it. This uses AI speech synthesis, video synthesis, and natural language processing technologies.

3 Multi-disciplinary Full-Scene News Coverage - The Example of the Two Sessions of the Guancha

3.1 Technical Level

Since 2018, AI anchors in China have been iterating and updating, from "sitting" to "standing", from 2D to 3D, from voice synthesis to sign language, and the AI anchor format has been enriched. The AI super-simulation technology is used to capture and intelligently process the sentences and facial expressions the host Guan Wang read. The emotion simulation engine learns and fully simulates the real person's emotional expressions, image temperament, voice intonation, lip expressions, and body movements, with a 97% resemblance to the real person. To make the virtual theme more relevant to the topic of the programme, the programme has specially designed a virtual studio with a sense of modernity and technology. The AI human and the real person were simultaneously implanted in the virtual scene, and real-time mirroring and compositing were carried out to creatively realise the simultaneous appearance of the AI human and the real person, enhancing the interactivity between the AI Guan Wang the host Guan Wang. The spatiotemporal authenticity of the news broadcast is reflected through technical means.

3.2 News Value Dimension

Based on the four dimensions of news characteristics: authenticity, timeliness, accuracy and objectivity, we analyse and evaluate the embodiment of Guancha's two sessions in terms of news value [5].

3.2.1 The Accuracy of the News Broadcast is Improved

AI anchors can ensure the accuracy of the words broadcast at this stage through voice intelligence generation. As technology develops and machines become more innovative, the AI anchor better understands language and speech patterns and is, therefore, more accurate at the semantic level. On this basis, it has reduced the number of tongue

slips, confusion and other broadcasting errors that occur in manual news broadcasting. Throughout the Guancha series, the AI human works with the host to achieve zero errors in the broadcast process, guaranteeing the accuracy of the broadcast content. In addition, the AI anchors can broadcast content in multiple languages without barriers. For example, during the 2022 Winter Olympics, CCTV News launched the first “Winter Olympics AI Sign Language Anchor” to bring sign language services to the hearing impaired; XiaoCheng, the world’s first multi-lingual AI virtual anchor developed by KDDI, can not only broadcast news in more than 30 languages (including foreign languages and dialects) but also supports automatic output of text to video. The above example successfully demonstrates that AI anchors can replace multiple foreign language anchors simultaneously, saving workforce and programme production costs while ensuring the quality and accuracy of the content itself.

3.2.2 Enabling “ALL-Time Communication”

AI anchors can deliver content in a timely and instant manner, 24/7. It is more efficient and faster than a live anchor. It saves the time cost of recording and reduces the time lag of real-time broadcasting, successfully empowering the full-time distribution of media content. It can also work 24/7, 365 days a year. The rapid generation of news videos, especially in emergencies, has an indefinite future in terms of improving both the timeliness and quality of reporting.

3.2.3 Ensuring the Authenticity of Content and Reporting

As the Guancha series is based on the range of the two sessions, it analyses and digs deeper, from the country’s macro policies to the micro details of people’s livelihoods, from visual data dissemination to professional interpretation of financial perspectives. During the broadcast, real interview clips were inserted without the intervention of artificial intelligence interfering with the authenticity of the overall news atmosphere.

3.2.4 The AI’s Advantage Over the Hosts Lies in Its Data Capabilities and Financial Expertise

The AI anchor’s identity as the report’s subject is less personal than that of a real anchor due to its technical specificity, thus giving it a more objective character.

3.3 Communication Effectiveness: Focus on Audience Experience

3.3.1 Cross-Scene Broadcasting Enriches the Audience Experience

AI anchors can create a variety of scenarios for “cross-scene broadcasting”. For example, in the coverage of the two sessions, the AI anchor freely switches between the studio and the interview site, which is thousands of miles away, making the news presentation more diverse and watchable, and giving the audience a rich experience and a sense of realism [6].

It Increases the Novelty of the Content and Stimulates the Audience's Desire to Pay Attention to It The innovation of the format enhances the audience's attention to the content.

The High Level of Simulation Has Reduced the Sense of Separation Between the Real and the Virtual Based on feedback from users of CCTV and comments on the bilibili website, we found that the AI's ability to broadcast with real people made it difficult for many audiences to distinguish between the real and the fake and that the AI's all-encompassing and realistic simulation of the hosts was ideal, reducing the problems that existed in the past. For example, the robot's voice and facial expressions were too stiff and lacked a sense of affinity and objectivity, making the audience feel uncomfortable. It brings a new experience for users and achieves a good communication effect.

The AI Anchor Shifted from a Single Mechanised Broadcast to Focusing on the Human Dimension By analysing the content broadcast by the AI anchors, we found a lot of new vocabulary and colloquial expressions. The content was professional and, at the same time, focused on audience experience and acceptance. With the user experience as the starting point for content explanation and reporting, the host's personal experience combined with AI's sense of technology, realising a 1 plus 1 greater than two reporting mode, interpreting the information of the two sessions for the audience in a comprehensive manner, reflecting the audience-oriented news reporting ideology.

4 Ethical Risks and Legal Dilemmas of Ai Applications in the News Industry

In the digital era, artificial intelligence technology is rapidly developing. Unlike the ethical risks of the past, the information and communication technology in the context of media convergence has given rise to more specific and complex ethical risks [7].

4.1 Audience Perception Risk

AI anchors represent a fusion of the virtual and the real; they broadcast with the "physical presence" of a real person, and from this perspective, AI anchors are both virtual and, in a sense, real and tangible. In particular, placing the AI anchor and the real anchor in the same scene exacerbates the problem of blurring the subject and the object, making it difficult to distinguish the real from the fake, thus posing a potential cognitive risk to the audience. The intermingling of virtual and reality makes it difficult for audiences to distinguish between AI anchors, virtual people and real people, or even between the real world and the virtual world, and people's identity security, cognition, and trust will be in great danger.

4.2 Ethical Risks

"The core of anthropomorphism is an illusion, so deception is a key ethical issue for social bots. Some scholars have even argued that designing bots to encourage anthropomorphic

properties should be considered an ‘unethical deception’. During human interactions with AI hosts, they are often not experienced as ‘illusory’ but rather as ‘real’. This reversal of experience is potentially confusing and risky. As the AI anchor becomes more and more like the real person it is based on, it becomes important to distinguish between the “rights and responsibilities” of the two in specific media applications and content production. In other words, who should be held accountable in the event of a broadcast incident? How is the identity of the AI anchor defined, and do their rights need to be protected? What is the relationship between the real anchor and the AI anchor? At the legal level, the ethical risks become more tangible.

The first is the risk of social stratification under the law of the jungle. Artificial intelligence clearly disproportionately strengthens the capabilities of some people, namely the ‘big data controllers’ and AI development companies that are at the forefront of AI development, while turning more and more people into vulnerable people who have difficulty protecting their privacy and freedom and are at risk of losing their jobs, for example. AI controllers in the news industry will take control of social discourse and exacerbate class disparities. For example, the technology and financial content teams behind the AI Guan Wang can easily and silently embed personal value goals in the technology and then rely on the AI Guan Wang’s trend research and broadcasting to convey implicit values to the impoverished masses with limited knowledge and judgment, creating a social consciousness level override.

Secondly, the risk of blurring the boundary between public and private power and flooding the news industry with political deal-making overtones. It can be glimpsed that the rapid development of AI technology gradually empowers it to surpass the knowledge of government advisors. It is boldly predicted that soon, the algorithmic power of the news industry will expand into the realm of public administration. AI Guan Wang can also provide the government with financial trend research and judgement in addition to news broadcasting, influencing its decisions, which will then be reflected in the news broadcast by ai Guan Wang, forming an interactive force.

Thirdly, the robot’s pragmatic function has given rise to human self-concession, and human self-determination is constantly being weakened under the influence of smooth, convenient and powerful AI technology. ai Guan Wang can achieve a 24/7 non-stop live broadcast mode, continuously forming a communication impact and responding to time-sensitive hot news events on a minute-by-minute basis. While it is making a bigger and stronger mainstream voice, people are passively and without choice receiving the stream of information pushed from various ports. In the age of paper media, people choose which newspapers to read and which voices to believe. In the age of smart media, however, AI technology has made people submissively accept the only information that appears to be always correct under the guise of technological neutrality. It also puts users at risk of being in a perpetual information cocoon.

Fourth, the subjectivity of the human being is threatened. In the first episode, the real person and the virtual person, Guan Wang, each introduced where their strengths lie. With rich experience in reporting on the two sessions, the real hosts have a constant concern and reflection on the macro policies of the country and the micro details of people’s livelihood, providing more opinion-oriented output in the programme. On the other hand, the avatar relies on the technology and financial content team behind the programme,

with strong data processing capabilities and financial expertise, to provide users with more objective and informative background information in the programme. The two are broadcast on the same screen to achieve a sense of hierarchy and gradient in the content, allowing the different strengths of the real person and the avatar to complement each other. However, data processing and financial professions are also inherently human jobs, and AI's replacement of humans is optimised. The human brain has a limited information capacity that is difficult to match compared to the AI's powerful ability to hold and process data. At the same time, machine learning and deep learning technologies allow machines to continuously optimise themselves to improve their learning capabilities and, in principle, to learn anything, giving them a natural advantage over human capacities, which is undoubtedly unfair to humans. Shakespeare's statement that "Man is the essence of the universe, the spirit of all things" and the limitations of the human brain in the face of the immense power of AI are challenging human subjectivity by replacing human labour in the news industry, especially in financial journalism, which requires powerful information-processing skills.

4.3 Legal Dilemmas

First, there is the potential for algorithms in the news industry to violate users' rights to information and privacy and be masked by algorithmic black boxes. The concept of the algorithm itself has cultural connotations, meaning that decisions based on algorithms are often considered rational, neutral, efficient, and trustworthy. However, in data adoption, news writing, the methods and principles (algorithms) and the scope of the data to be taken into account are determined by human-written code. In the AI Guan Wang's news broadcast, humans are entrusting a large number of choices to AI technology to use big data to select or screen for judging or deciding on the feasibility and applicability of public policies and financial trends. This is likely to lead to biased, one-sided and non-transparent results that may be whitewashed or obscured by supposedly "scientific, systematic, comprehensive and objective" data or graphics. Further, algorithmic black-boxing makes it impossible for users without specialist knowledge to detect the logic and intent behind the data collected, decisions made, and information pushed by AI, concealing some inappropriate behaviour. What is more, regulators who do not have the head technology also have difficulty holding AI accountable for infringements in the context of technology neutrality and trade secret defences.

The second is algorithmic discrimination. Just as Google's image recognition algorithm once labelled images of black people as "gorillas", so too does the AI Guan Wang "construct identity and reputation through classification and risk assessment, creating opportunities for discrimination, normalisation and manipulation due to the lack of transparency, accountability mechanisms, monitoring systems and due process constraints. Manipulation." Algorithmic manipulation is increasingly evident, in essence, through big data technologies that mine and analyse personal data and information to digitally profile individuals and push content based on their likes and dislikes to influence individual decisions to their detriment. The widespread dissemination of news, on the other hand, makes it a risk of aggregation, posing a threat to the public interest of society [8].

The third is the issue of the legal subject qualification of AI robots. The capability of legal subjects given to AI mimesis is not legally recognised in various countries, but

there are already hints of it in practice. For example, in 2014, Deep Knowledge Ventures, a Hong Kong company, appointed to its board a set of algorithms called VITAL, which analyses large amounts of data to make investment recommendations. Like the other five directors, the algorithm can vote on whether to invest in a company. However, the dominant view in traditional civil law regarding the unshakable foundation of natural and legal persons makes the protection of the rights and liability of AI robots a dilemma at the same time [9].

Fourth, copyright attribution and protection. There are divergent views on whether AI-generated content is copyrightable, i.e. whether AI-generated content constitutes a work in the sense of copyright law; the status of AI as a legal subject, i.e. whether it can be a subject of rights in law, especially in copyright law; and the path of attribution and protection of the rights and interests of AI-generated content. Scholars who oppose copyrightability argue that AI is not capable of achieving strong AI that is functionally comparable to human intelligence, let alone super AI that surpasses human intelligence in all aspects. AI-generated content is the result of applying algorithms, rules and templates and does not have originality [10]. In contrast, scholars in favour of copyrightability argue that deep learning has enabled AI to achieve active learning to solve problems without pre-set algorithms or rules and that the independence of AI has become so significant that human pre-setting not only has very little impact on its creation and decision-making but may not even be necessary. Whatever the answer, the current copyright ownership and protection of AI-produced content in China are vague and weak. There are different views in academia as to the attribution to AI, designers, owners, users and legal persons [11].

5 Conclusion

The success of Guancha is a successful attempt at the synergy between AI technology and the news industry. Further, it deepens media integration and the systematic transformation of the overall media industry chain. But does this mean that ‘AI synthetic anchors’ can replace real news anchors and cause them to be laid off en masse? The author believes that real anchors still have irreplaceable characteristics compared to AI anchors, such as political awareness, thought and emotion, charisma, self-awareness, adaptability, innovation, aesthetic ability, cross-disciplinary thinking, logical reasoning, and interactive affinity and the art of programme management. These characteristics also dictate that AI anchors can only be used as a tool and cannot completely replace real anchors [12].

We should be aware of the risks and drawbacks of AI and combine the advantages of AI technology and real people to develop a new level of news broadcasting. In the process of “human-computer interaction”, it is important to apply human screening methods and play the role of gatekeeper in content generation and review. It is important to adhere to the idea of “human-centredness” and treat artificial intelligence as an applied technology rather than a subject, and not to rely too much on its advantages of efficiency and low cost and give up the control of the right to speak. In addition to the development of media fusion with new technologies, we should also recognise AI’s risks and ethics in terms of journalistic ethics, science and technology, and laws and regulations. The three

principles of journalistic transparency, value neutrality, and co-regulation of morality and law will be upheld concerning the uncertainty of the technology itself. The ethics will be structured and standardised to give full play to the advantages of AI [13].

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