

Practical Exploration and Challenges of Generative AI-Empowered Converged Media News Production

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Abstract: The rise of generative artificial intelligence technology is driving profound transformations in the paradigms of converged media news production. This paper systematically explores the empowering practices of generative AI across the whole chain of news production, covering key links including intelligent text creation, automated video production, efficient editing and review, and targeted communication. In-depth analysis is conducted with typical cases such as the interactive comic project of *Jiangxi News Client* and *People's Daily Creation Brain*. The study finds that generative AI delivers remarkable outcomes in boosting production efficiency, diversifying content forms, and realizing personalized content delivery. Nevertheless, its application is accompanied by severe challenges including the erosion of journalistic authenticity, risks to data privacy, algorithmic bias, and ethical-regulatory concerns in the industry. This paper argues that future development should promote technological application while constructing a new human-machine collaborative production model. By improving content review mechanisms, strengthening data-security governance, and advocating algorithmic transparency and accountability, we can strike a balance between technological innovation and journalistic professionalism, and further advance the in-depth development of media convergence.

1. Introduction

Driven by the sweeping wave of digital technologies, the media industry is undergoing an in-depth transformation centered on intelligence. As a core enabling technology, generative artificial intelligence, with its powerful capabilities in content generation, semantic understanding and data analysis, has penetrated the core links of news production as a tool, reshaping the entire workflow ranging from content collection and production to distribution. It has greatly liberated the productivity of journalists, enabling rapid response, mass-scale production and personalized customization. Meanwhile, it has given birth to new formats such as interactive journalism and virtual anchors, enriching the expressive discourse and communication scenarios of converged media news. However, beneath the glamour of technological empowerment, controversies and hidden worries regarding journalistic authenticity, human subjectivity, ethical security and industrial ecology have emerged. Accordingly, based on the positive explorations in current industry practice, this paper systematically sorts out the concrete practical modes of generative AI

empowering news production, objectively analyzes the practical challenges brought by the technology, and attempts to propose innovative and normative paths for future development, so as to provide academic references for building a sound and sustainable intelligent news ecosystem.[1]

2. Diverse Practical Paths of Generative AI Empowering News Production

2.1 Intelligent Text Creation: From Auxiliary Writing to Collaborative Generation

In the domain of journalistic text production, the core value of generative AI lies in its deep language modelling capacity built upon large-scale corpus training. It can imitate the writing style and narrative structure of specific media outlets, and automatically generate complete and coherent news drafts according to key information points. It demonstrates high efficiency especially in formulaic reporting such as financial briefings, sports results and weather forecasts. In the event of sudden incidents, AI can rapidly integrate multi-source information to sort out event timelines, saving precious time for journalists in information consolidation. This allows journalists to focus more on in-depth investigations, core fact-checking and exploration of human-centered perspectives. In addition, auxiliary functions of AI tools including grammar proofreading, headline optimization, abstract generation and multilingual translation have significantly improved the linguistic quality and communication adaptability of manuscripts, facilitating the shift from labour-intensive writing to intelligence-intensive creation.[2]

2.2 Dynamic Visual Production: Construction of Videos, Images and Virtual Scenarios

Visual content constitutes a core competitive advantage for converged-media journalism. Generative AI exhibits tremendous potential in this dimension. For video production, AI enables intelligent editing: it automatically identifies key footage and audio clips from news materials, matches subtitles, transitions and background music, and rapidly produces concise short news videos. AI image-generation technology can create or restore news illustrations, infographics and data-visualization diagrams based on textual descriptions. It plays a unique role in scenarios lacking real-shot materials, such as historical reconstruction and demonstration of scientific principles. Virtual anchors and digital humans are landmark applications. They support 24-hour non-stop broadcasting and realize multimodal cross-language interaction, breaking physical constraints to serve specific scenarios or young audiences, and standing as a frontier for media-brand innovation.[3]

2.3 Process Optimization and Intelligent Decision-Making: Upgrading Editing, Review and Curation

Within news-editing back-end systems, generative AI acts as both an intelligent assistant and a risk-controller. Automated typesetting tools intelligently combine text, images and video materials to form layouts with consistent styles. More profoundly, it affects content review and topic curation. Leveraging natural-language processing and knowledge graphs, AI systems conduct preliminary screening for factual errors, identify sensitive information and potential disinformation, building the first line of defence for content security. Meanwhile, by analysing real-time online hot-topic trends, public sentiment and user-reading behavioural data, AI can provide forward-looking topic suggestions and communication-effect predictions for editorial teams. This drives news planning to shift from experience-driven modes to hybrid modes combining data-driven insights and professional judgement.[4]

2.4 Personalized Communication and Public-Opinion Perception: Reshaping User Connections

Generative AI, through algorithmic models, gains deep insights into user profiles and realizes one-to-many personalized news delivery, which greatly improves user stickiness and information reach rate. Beyond a mere distribution technology, it is a means of relationship construction, enabling media institutions to deliver customized information services. Furthermore, AI demonstrates outstanding performance in public-opinion monitoring. It can track real-time social feedback after news release, automatically detect public-opinion turning-points and potential risks, and offer data support for media outlets to conduct timely public-opinion guidance, crisis public relations or supplementary reporting, so as to realize dynamic and intelligent management of the communication process.[5]

3. Analysis of Typical Cases: Innovative Integration Practices of Generative AI

3.1 Immersive Exploration of “News + Scenario + AI”

Jiangxi News Client launched the project *I Travel with Migratory Birds*. Going beyond conventional text-image or video reporting, it adopted generative AI to build an open-ended interactive comic space based on the migration routes of migratory birds in Jiangxi Province. In this project, AI functions as both a scenario engine and a content generator. On one hand, it produces dynamic ink-style digital maps, translating geographic information and ecological data into explorable visual landscapes. On the other hand, it designs interactive modules for users to engage with virtual migratory birds and geographic landmarks, embedding journalistic narratives into gamified experiences. This practice successfully softens hard-news content, integrating science popularization, cultural display and news communication. It embodies the unique value of generative AI in creating immersive journalism and boosting public participation.[6]

3.2 Intelligent Transformation of Mainstream Media

People’s Daily Creation Brain represents the systematic deployment of generative AI within the content pool of central-level media. More than a writing assistant, it serves as an integrated system covering content generation, intelligent review, hot-topic analysis and stylistic adaptation, empowering multi-platform and multi-form content production across affiliated channels. It reflects the transition from isolated tool application to systematic capacity-building. China Media Group has repeatedly adopted AI-generated videos in programmes such as *Evening News* to simulate hard-to-film scientific phenomena, visualizing and dynamizing abstract and complex news backgrounds. This greatly enhances the explanatory power and visual impact of television news. These cases indicate that generative AI has become a strategic tool for mainstream media to improve content output, innovate expressive forms and consolidate communication influence.[7]

4. Practical Challenges and Deep-Seated Concerns

4.1 Crises of Journalistic Authenticity and Professional Subjectivity

Authenticity is the lifeline of journalism, yet the operational mechanism of generative AI inherently carries risks of undermining authenticity. First, large-language models generate texts based on probability, which may weave erroneous associations or fictitious information from training data into logically coherent yet factually incorrect reports, creating hard-to-detect deep-fake

traps. This poses challenges to traditional fact-checking workflows centred on cross-verification of information sources. Second, the content-generation process of AI is a black box. Unlike human journalists, it cannot clearly trace the specific source of every piece of information, damaging the reliability and traceability of news reports. Third, when news organizations over-rely on AI for end-to-end workflows from topic identification to draft writing, journalistic work may degenerate into mechanical refinement and packaging of algorithmic outputs. The core of journalistic professionalism may be marginalized by AI-driven pursuit of rapid traffic. Journalists risk shifting from public watchdogs to assembly-line content operators, resulting in impoverished depth and ideological value of journalistic products.[8]

4.2 Data Security, Privacy Protection and Algorithmic Bias

The operation and training of generative AI rely on massive volumes of data, which gives rise to critical issues concerning privacy and fairness. In terms of data security and privacy protection, personalized news recommendation hinges on in-depth mining and profiling of user behavioural data. Improper data storage or malicious exploitation may severely infringe upon personal privacy. A deeper challenge lies in algorithmic bias and systemic discrimination. Bias embedded in AI models originates from pre-existing social, cultural, gender and racial prejudices within training datasets. In news production, such bias may manifest as follows: selectively amplifying voices of certain groups or topics while silencing others; unconsciously reinforcing stereotypes in coverage of social issues such as recruitment and crime; and solidifying users' cognitive horizons via personalized recommendation, aggravating echo-chamber and filter-bubble effects. This violates the public mission of journalism to foster social understanding and social cohesion, and may further amplify social divisions and distort public agendas. Ensuring algorithmic fairness and transparency constitutes an indispensable technical-ethical responsibility for news institutions.[9]

4.3 Ethical Malpractice and Lagging Regulation

Issues including copyright attribution of AI-generated content, transparency requirements for AI-generated content labelling, and malicious use for producing deep-fake news impose shocks upon existing journalistic ethics and legal frameworks. Current regulatory systems remain inadequate to effectively govern the rapidly evolving AIGC technologies.

4.4 Impacts on Industrial Ecosystem and Occupational Structure

The automation capacity of generative AI exerts direct impacts on the human-resource structure of the news industry. Basic and formulaic positions in writing, editing and video-editing face the risk of downsizing, triggering occupational anxiety and structural unemployment pressure within the industry. This requires news institutions to redesign human-resource strategies. On the one hand, investment should be made in skills-upgrading training for existing employees to equip them with new competencies including AI collaboration, data interpretation and algorithmic governance. On the other hand, interdisciplinary talents with journalistic sensitivity and digital literacy need to be recruited. More fundamentally, it is imperative to reconstruct the human-machine collaborative paradigm for news production. The newsroom of the future should pursue human-machine symbiosis rather than machine-driven human replacement.[10]

5. Conclusion and Prospect

It is an established fact that generative AI empowers news production. The key to its future

development lies in guiding technology to act for public good and serve practical needs. First and foremost, journalistic professional values must take precedence over technological logic. Media institutions should implement rigorous human-in-the-loop review mechanisms. Journalists and editors shall bear full responsibility for factual verification and final quality of AI-generated content. Second, we should accelerate the establishment of ethical and legal regulatory systems. Industry associations, regulatory authorities and technology enterprises should jointly promote the formulation of transparency standards, data-use ethical codes and infringement-judgement rules for AIGC applications in journalism. Third, we should advocate algorithmic benevolence and improve technical literacy. Media organizations should proactively detect and rectify algorithmic bias, while strengthening AI-skill training for practitioners and media-literacy education for the public. Finally, we need to explore new paradigms of human-machine collaboration. Future news production should assign repetitive and data-intensive tasks to artificial intelligence, while reserving for human journalists core work requiring critical thinking, emotional resonance, ethical judgement and creative narration. In short, generative AI is not a disruptor of journalism, but rather a powerful reshaping tool. Embracing its potential for efficiency and innovation while upholding the journalistic-professionalism bottom-line of truth, objectivity and impartiality, and pursuing development through dynamic balance, is the inevitable path for the evolution of news production in the era of converged media.

References

- [1] Wang, X., & Wu, J. *Research on the Application of Generative AI Technology in News Production*[J]. *News Research Guide*, 2024, 15(17):10-14.
- [2] Guo, L., Wei, Z. Y., & Liu, W. *From the Margins to the Core: Three Logics of Generative Platforms Embedded in News Production*[J]. *Chinese Editors*, 2024(07):36-42.
- [3] Shi, Z. *Innovative Application of Generative AI Technology in News Production*[J]. *Television Technology*, 2024, 48(07):115-117,124.
- [4] Liu, L., Han, Y., & He, X. L. *News Production and Generative Artificial Intelligence: Human-Machine Collaboration, Information Feedback and Media Evolution*[J]. *News Research*, 2024(04):33-39,94.
- [5] Zhou, C. H., & Lu, J. X. *Innovation of News Production Under the Influence of Generative Artificial Intelligence: Practices and Challenges*[J]. *Young Journalists*, 2024(03):5-11.
- [6] Cui, Y. *Value Challenges and Optimization Strategies of Generative Artificial Intelligence Intervening in News Production*[J]. *Contemporary TV*, 2024(02):104-108.
- [7] Xu, J., Liu, X., & Jiang, X. L. *Practical Progress of Human-Machine Coupling Between News Production and Generative Artificial Intelligence*[J]. *Journal of Nanchang University (Humanities and Social Sciences)*, 2023, 54(05):114-122.
- [8] Chen, M. *Applications, Practical Problems and Countermeasures of Generative AI in News Production*[J]. *Young Journalists*, 2023(19):57-59.
- [9] Zhang, Y. C. *Opportunities and Challenges Brought by Generative Artificial Intelligence to Journalistic Visual Production*[J]. *Chinese City Journalists*, 2023(09):48-50.
- [10] Chen, M. *The “News-Advertising” Model: The Re-formatting of News Communication by Generative AI*[J]. *Media Observer*, 2023(03):18-24.