

Some Recent Developments in Media Technology

V. Basil Hans^{1,*}

Abstract

The creation, distribution, and consumption of material have all changed as a result of the media technology's quick development. The influence of 5G on streaming and interactive media, virtual and augmented reality (VR/AR), blockchain for media rights management, and artificial intelligence (AI) in content creation are some of the current developments in media technology that are examined in this article. The rapid advancement of digital technology in recent years has significantly transformed the media landscape. Innovations like deepfake technology and machine learning-driven personalized recommendations are enhancing user experiences while also raising critical security, legal, and ethical concerns. These developments are reshaping the way media is created and consumed, bringing both opportunities and challenges. The production, distribution, and consumption of media have changed as a result of the convergence of immersive technologies including VR/AR, blockchain, AI, and 5G connection. These developments have made it possible to create and distribute material with previously unheard-of levels of efficiency, customization, and interactivity. Media firms may now automate journalism, video editing, and even creative narrative thanks to the growth of AI-powered content development. Additionally, machine learning algorithms improve user experience by making tailored recommendations. Media streaming has been further transformed by the rollout of 5G networks, which allow for high-speed, low-latency content transmission that facilitates real-time interaction. Furthermore, blockchain technology is offering new approaches to digital rights management, guaranteeing media ownership security and transparency. But there are drawbacks to these advancements as well, such as moral questions about deepfake technology, false information, and data privacy. This essay examines the most recent developments in media technology, their uses, and their potential effects on the sector going forward. We hope to shed light on how these technologies are influencing the media experiences of the future by analyzing both the advantages and the difficulties.

Keywords: Media sectors, education applications, digital platforms, symbiosis, technologies, data-driven guidelines

INTRODUCTION

Recent technology advancements have caused individuals to quickly become used to new, practical tools and solutions. It is challenging to anticipate every development in this subject, though. An overview of the mass media technologies that are still in the early stages of development but have the potential to become widely used in the next years is provided. Thinking about research and development is a crucial task since it can inspire the creation of new settings and solutions that could lead to the pinnacle of media technologies and aid in anticipating future trends. The goal of this work is to forecast the technical developments and trends that the media industry.

*Author for Correspondence

V. Basil Hans
E-mail: vhans2011@gmail.com

¹Research Professor, Department of Management & Commerce, Srinivas University, Mangaluru, Karnataka, India

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A very clear, time-varying, colorful, and detailed picture of reality can be seen thanks to advancements in signal compression, rectification,

stereo/3D display technology, packaging, and encryption. Improvements in stills, motion, and panorama were also part of these breakthroughs. Research on creating a machine that could artificially understand, learn, or even "feel" something that resembles and mimics fundamental aspects of the human mind has been ongoing for many decades. Electronic technologies are now comparable to living brains in terms of their powers and functions. The current trend indicates that there will be greater space for collaboration and expanding "symbiosis" in the next years.

AUGMENTED REALITY AND VIRTUAL REALITY

New media options for creative journalism and storytelling, as well as more intricate forms of participative and individualized communications, are presented by virtual and augmented reality (VR and AR). As the media environment changes and is implemented on various platforms and tools, the most intriguing innovations in the upcoming years will be found at the nexus of developing technology and services [1]. In this regard, virtual reality and augmented reality have the potential to develop into (i) whole new immersive media types, as well as (ii) more "invisible" and mixed-reality experiences, services, and interfaces that are integrated as layers "on top of" or embedded inside traditional media. There will be a new culture of production in this new era of media and communication that involves cross-convergent media production chains, journalistic domains, and collaborations in media that go well beyond conventional fields and knowledge. Additionally, it will improve market heterogeneity and opportunities for creative sectors, provide access to the global media landscape, and allow public service media organizations to interact more intimately with markets and audiences. Instead of preparing for new revolutions and technological/market paradigms, media and journalists may become mired in existing practices and preoccupied with adjusting to the changes brought about by the development of the web (mobile and social). Research on the structural and regulatory aspects of new digital platforms and innovations appears to be lagging behind the rate of change and investment that has created the new media and communication landscape thus far, both on the offer and demand sides. Reviewing what is known and what is not yet understood or adequately addressed by research on the economic and business elements of the new digital platform settings seems appropriate given the rapid, disruptive, and pervasive changes that are occurring in that landscape.

Entertainment Applications

The way individuals consume entertainment has significantly grown as a result of recent developments in media technologies. Virtual and augmented reality technologies are the ones that are developing the fastest out of all the new technologies now in use. High-quality, three-dimensional (3D) computer-generated settings are produced using virtual reality, giving users the impression that they are physically present in those spaces. In contrast to virtual reality, augmented reality creates a composite image by overlaying digital items on top of the actual world. The development of highly captivating and immersive experiences is made possible by these technologies. They have the power to completely reimagine what it means to play our favorite games, go to the movies, or attend a concert; audiences are being given access to stories that would otherwise be like entering a world they had only been able to observe from afar. Dr. Walker warned that there was a risk that centralized organizations would exchange information excessively and intrusively, jeopardizing individual privacy [2].

The numerous uses and effects that virtual reality and augmented reality are currently having on luxury fashion are examined in this area. Virtual closets and virtual try-on experiences are transforming how customers interact with clothes. They are also giving the fashion sector new creative opportunities. Virtual showrooms are online locations where customers can use an interactive 3D interface to view a variety of products. The fashion industry's involvement with this software has placed premium labels and ready-to-wear in a positive light about the potential for immersion in this virtual world. Luxury companies are trying to connect as the trade spat intensifies and shrinks their market share in the world's largest consumer market. Understanding the models and the game's future—particularly the fashion crossover—is also crucial. Does luxury fashion have a place in the metaverse? Through collaborations and new collections with video games, fashion brands are already making their way into the metaverse,

marking a shift in how customers will experience fashion in a digital world. Fashion firms are starting to consider investments in virtual apparel that will be required for the future metaverse through digital copies, as well as sustainable initiatives.

Educational Applications

Using mobile devices to bring computer-generated items into the real world (AR) or opening a world within a computer (VR) have the potential to transform conventional teaching and learning methods. Naturally, students can have a more comprehensive and full learning experience in an immersive learning environment; at the same time, they will be more engaged and have greater information retention [3]. VR materials combined with a multimodal teaching approach may increase student engagement and foster more favorable attitudes. The VR group was especially beneficial for tactile and visual learners. These findings could serve as proof to highlight the value and advantages of incorporating immersive learning into instructional methodologies or using it as a teaching method. Furthermore, it is suggested that in order to close educational gaps, a new eco-system approach involving educators, technology developers, content producers, infrastructure setup, and opportunities for lifelong learning would be required to help underprivileged communities learn and adjust to new technologies and the impending labor market. As time passes, society must adjust to the constant shift in the kinds of technology and their commercial accessibility. Therefore, an overview of ongoing projects about the initial step to start developing social VR or other profound spatial technologies into an academic curriculum is reviewed in order to provide a timely insight and projection on the aforementioned transformation.

MEDIA ARTIFICIAL INTELLIGENCE

New insights into the possibilities, constraints, and difficulties of applying artificial intelligence (AI) in scientific research and science journalism have been made possible by the growing interest in and integration of AI in general, and its therapeutic and media education applications in particular. The interactive aspect of new media is strengthened by the development of sophisticated intelligence technology. Science journalism is supposed to serve as a bridge between the general public and the scientific community by accurately, lucidly, and engagingly popularizing science. It encourages a wide range of people to comprehend and acquire knowledge about scientific research in order to make better decisions for their own life, society, and the wider world [4]. The application of AI may provide fresh insights into how science journalism approaches invention, production, distribution, and reception. It also reveals that there are significant obstacles to using AI in scientific research and science journalism, particularly when it comes to maintaining a high standard of accuracy and rigor when disseminating research findings.

Systems driven by AI are beginning to support people in the creation of music, movies, television shows, and other creative output. These systems are being used more and more to analyze consumption patterns, improve metadata, create new content, transform concepts into data-driven guidelines, help with the execution of audio, sound, and visual productions, and identify harmful or abusive content in the creation of audiovisual media. AI systems are employed in the creation of creative content in a variety of fields, including the media industries of music, cinema, television, and even as diverse as advertising, theater, and cooking.

Additionally, there is evidence of increased interest in and usage of AI technologies in media output. AI-powered solutions in media and marketing creation help to replace repetitive chores, making room for original work that is more intriguing and engaging. This helps people and organizations produce their creative material more consistently and efficiently. Applications for searching, choosing, or creating information based on prevailing or emerging trends are becoming more and more numerous. Last but not least, AI-assisted systems now produce large volumes of text instantly. They do this by analyzing data to monitor live events or analyze social media content, and they provide real-time alerts based on automatically identified patterns.

Production of Content

AI is enabling the complex process of text generation in media. AI is permeating every industry and is becoming more and more significant in the media production process. Using data-driven techniques, this invention examines the most advanced AI technologies for creating written, audio, and visual content. For instance, after editors create articles that are hard for readers to grasp, the written content is typically manually simplified [4]. A report about a football game that was regrettably lost by the home team might thus be generated automatically, with the editor's sentiment significantly altered by the computer's poor decision. Apart from instrumental automation, there is currently little use of AI technologies to optimize the production flow. This invention offers a real-world case study that illustrates how news organizations could use a particular combination of machine learning (ML) and natural language processing (NLP) to maintain the caliber of the writings they create. The deployment of the news agency up to the monitoring dashboard design is then viewed from a historical perspective.

Examples show off generative AI techniques that can create art, music, or articles. At the same time, bring up the worries and problems that the creative and traditional media industries confront on a daily basis as a result of the growing use of AI technology. Instead of replacing a human creator, AI plays a supporting function in completing the generated duties. The result raises unresolved issues regarding authorship and possible risk-reduction guidelines. There are numerous internet toolkits available for creating news pieces in both Chinese and English, and doing so is quicker and more imaginative. It is anticipated that the widespread use of this technology, in conjunction with the vast amount of informative data accessible online, would fundamentally disrupt the creative workflows of traditional creative firms and the media. The limitations of generated content are then examined, as are the primary countermeasures that are anticipated to be used in support of human creators rather than in their place.

Individualized Suggestions

More media is consumed by people than ever before, coming from a wider range of channels, formats, and sources. The automation of critical media jobs (analysis, classification, optimization, and creation) and the personalization of media experiences (discoverability, adaption, and amplification) make AI a notable force driving development in the sector. In addition to showcasing the current state of the art and some potential future possibilities, this article addresses the ethical and social ramifications of AI's influence on media consumption. Using a quantitative examination of a huge collection of news sources, the second section offers an empirical method to evaluate how AI influences media consumption. Three primary research directions are described in the third section, with an odd case study to illustrate each.

Algorithms and neural networks are changing how people consume media material. Much of what individuals watch is determined by streaming services, and the point at which algorithms put the most obvious pressure on consumers is when they are asked "what to watch next." In a similar vein, social media feeds have rebalanced the power dynamics between news consumers and gatherers; ranking algorithms now determine which stories users choose to read rather than editors. A similar process is used by news aggregators, which decide the stories' relative exposure rather than the feed as a whole. Though it also creates divisive issues, this is justified on the basis of offering more relevant and individualized experiences [5].

BLOCKCHAIN TECHNOLOGY IN THE MEDIA

The media business greatly benefits from blockchain technology, which offers creative solutions to enhance and make the current content distribution and validation procedures more dependable and safer. The music, image, and other media industries can benefit from blockchain technology since it makes it simple to verify ownership of new works and safeguards intellectual property by attesting to their existence and ownership. Content producers can record each time a new song is written or a picture is produced in a secure manner guaranteed by blockchain technology. In the rapidly changing digital landscape, copyright protection is especially crucial for the clear and open acknowledgment of creators' economic rights.

By use of a shortened contractual arrangement, smart contracts—self-acting computer programs—allow content creators to be fairly authenticated, automate and enhance royalties, and distribute income among creators, middlemen, and the general public. As a result, small enterprises and individual authors concerned about the monetization of their works may consider hefty legal and labor expenditures. Additionally, intermediary exploitation or hidden fees are eliminated because each step of the contract is independent and unquestionable.

Blockchain is an essential component for verifying the legitimacy of advertising, not only for the consumer but also for the publicist and the scanning of its content. With regard to digital distribution, this new method of network media offers a wealth of chances to launch new companies or boost the expansion of already-existing ones. The potential for peer-to-peer networked creatives who aim to circumvent middlemen to engage with a larger audience—albeit at great personal discretion—is another advantage of this new business model. Blockchain still faces obstacles to widespread adoption and acceptability, even if it is being used more and more in a variety of industries, including as finance, healthcare, logistics, food, and energy. The market domination of major media publishers, labels, and broadcasters who also oversee their distribution networks may be under danger if this technology is adopted. Additionally, there is a significant lack of expertise and a domain gap between media managers and creatives and technology, as evidenced by their reluctance to invest in capacity for solar use and technologies they do not completely understand. In conclusion, protecting data that is kept on or retrieved from a blockchain may provide challenges, especially when it seems to follow excellent data usage guidelines like input to forget.

Protection of Copyright

The media industry will become more competitive, especially for artists, as the number of content creators keeps growing. It is essential that the artist and their work have a close relationship. In addition to honoring their dedication, this relationship serves to show them gratitude and support for upcoming endeavors. Copyright is one of the main problems that creators deal with. Generally speaking, there are two rights to uphold: the music's own rights and those of the creator, who is the work's author along with other pertinent parties. The goal of the work is to determine the genuine author of a creative and the ownership status of an authorized invention. Blockchain is anticipated to provide a clear and simple way to verify the authorship and ownership of a creation. According to Schoenhals et al. [6], digital rights management refers to the control of the music itself, including how it is performed, what music is utilized, and where it is used. Blockchain technology allows for the accurate and convenient management of a music composition's digital rights. Uploading, sharing, selling, or stealing works without the owner's permission is considered traditional copyright infringement. Blockchain technology is anticipated to be a way to safeguard copyright against illegal uses or infringement, and it can stop the creation of phony accounts and author information. Numerous internet platforms and technologies have recently been developed for the pay-per-use verification of postings pertaining to art. Blockchain is also used in these kinds of platforms and systems.

Although blockchain data itself can present legal challenges, the blockchain validation process is anticipated to be ready for legal disputes in the art area. Instead of using a direct blockchain method, it uses machine intelligence and traditional rights management to limit the negative features. Blockchain and other components take a more thorough approach. Algorithms that efficiently handle copyrights and royalties can boost a creator's revenue. Growing recognition of blockchain's ability to ensure correct execution is also anticipated as the use of algorithms rises [7]. Blockchain-based open source data analysis tools will show interest in the most recent advancements. After this strategy is successful, further cutting-edge blockchain features will be investigated. Everyone has rights, regardless of whether they produce writing, art, music, or videos. Today, intellectual property protection is known as copyright. For artists, this might include their visual arts, writing, music, photography, and videography. Although web-related legislation began in 1998, it remained somewhat vague until 2016. In order to make the creation of devices or services illegal, the Digital Millennium Copyright Act was established

in 1998. By making it unlawful to remove digital rights management from content in order to make it freely available everywhere, this secured copyright. However, in a quickly changing digital environment, the issue of determining authorship and ownership persisted despite its importance.

Advertising Transparency

In recent years, efforts to increase the media marketing industry's transparency have focused heavily on the problem of advertising fraud. Putting blockchain technology into practice can improve transparency. Blockchain-based apps that confirm whether advertisements are reaching the intended audience rather than being pocketed could lead to a higher return on investment for online business advertising. Because online brand advertising is opaque and brand exposure is difficult to evaluate, marketers now lack clarity regarding ad placements, which this verification gives them [8]. Blockchain technologies give advertisers the ability to reward customers and control who sees their adverts. By using blockchain technology to improve ad verification, brands may more accurately gauge the effect on consumers, thus increasing the value of online advertising. Blockchain adoption can also lead to a decrease in the requirement for middlemen. Applications of blockchain technology are probably going to reduce the need for middlemen in online retailing, brand content marketing, and brand advertising [9, 10].

Blockchain solutions in the media industry guarantee that advertisers only pay for legitimate click-throughs. The verifiable recording of the whole advertising data may facilitate correct ad placement monitoring, reduce ad fraud, and facilitate interconnected advertorials. In order to receive tailored advertisements, customers can also freely supply precise information about their preferences and whitelist advertisers using this application. As a result, depending on the publication, brands can choose how much to pay on online placement. Businesses must verify that customer interactions with advertisements are legitimate and take all appropriate steps to guarantee that partners abide by this policy. Ad interactions that take place in deceptive ways are deemed invalid and may lead to ad fraud. The presentation of misleading information and whether or not a clear attempt is made to demonstrate transparency of the information provided in the advertisement and of the nature of the action the consumer must take in order to receive the promised goods, services, or results are examples of misleading circumstances.

CONCLUSION AND UPCOMING DEVELOPMENTS

In conclusion, a thorough understanding of both current and historical technology is necessary to fully appreciate their implications for the future. Over the years, there has been a significant growth in research on AR and VR technology. It will be possible to realize and develop new directions by conducting a holistic examination of this unified corpus of research. As a result, contemporary problems and challenges in the media and elsewhere might become more apparent. At the nexus of blockchain, VR, AR, and AI, enormous potential are opening up, and these developments are influencing our communication, collaboration, and content consumption. These technologies will revolutionize the infrastructure and fundamental tools of media creation as well as the media experience itself. The technological and artistic potential of these cutting-edge media has been emphasized in this study, which has also critically analyzed the advancements and problems related to them. It is evident that these technologies are becoming more and more prevalent in the modern media landscape, posing a variety of novel creative problems and opportunities. As these technologies continue to change and influence the media landscape, practitioners must develop an optimistic outlook and learn to adapt and try new things.

These new technologies and their intersections will influence the media landscape of the future. Based on the interviews and observations of media organizations and tech companies driving innovation in AI-driven news, a framework for addressing newsroom readiness to successfully implement AI tools can be developed. However, there will be challenges with integrating AI into journalism. As technology advances, media outlets and journalists will have to deal with moral dilemmas, look for fair coverage,

and worry about losing control over the algorithms and procedures that are used to maximize output. Legislators and society will simultaneously look for solutions to the problems that the automation of news production and editing presents. High levels of skill development are necessary for the technicalization of news operations, and the frequently opaque nature of machine learning algorithms and massive data sets raises questions about algorithm-driven content personalization and the need for stricter media regulations. Basic forms of user-generated AR are made possible by social media platforms, and short form material is reshaping the digital world. According to estimates, the amount of investment for 2018 was between \$1 and 1.5 billion. As a result, it is anticipated that AR ads on social media platforms reached \$13 billion in 2022. However, progress has been made in creating cross-platform, networked blockchain-based solutions for digital content attribution verification and compensation. Given their potential uses, it is suggested that as these technologies become more integrated, their impact on changing media will increase and intensify. Full implementation is still lacking, though, and user-friendly interfaces and readily available tools must be developed. It is necessary for the continued successful innovation and reshaping of media practices, as it is for any new, quickly developing technologies, as well as the networks and consensus that support them. Understanding this study gives practitioners a deliberate understanding of cutting-edge, late-breaking communication technologies, enabling them to take advantage of both current and upcoming developments. This is essential for staying abreast of the rapidly developing intersectional "metaverse" of blockchain, VR, AR, and AI, which may predict future changes in the media landscape.

REFERENCES

1. Cipresso P, Giglioli IA, Raya MA, Riva G. The past, present, and future of virtual and augmented reality research: a network and cluster analysis of the literature. *Front Psychol*. 2018; 9: 2086.
2. Hamad A, Jia B. How virtual reality technology has changed our lives: an overview of the current and potential applications and limitations. *Int J Environ Res Public Health*. 2022; 19 (18): 11278.
3. Huang KT, Ball C, Francis J, Ratan R, Boumis J, Fordham J. Augmented versus virtual reality in education: an exploratory study examining science knowledge retention when using augmented reality/virtual reality mobile applications. *Cyberpsychol Behav Soc Netw*. 2019; 22 (2): 105–110.
4. Amato G, Behrmann M, Bimbot F, Caramiaux B, Falchi F, Garcia A, Geurts J, Gibert J, Gravier G, Holken H, Koenitz H. AI in the media and creative industries. *arXiv preprint. arXiv:1905.04175*. May 10, 2019.
5. Jannach D, Zanker M, Felfernig A, Friedrich G. *Recommender Systems: An Introduction*. New York, NY, USA: Cambridge University Press. 2011.
6. Schoenhals A, Hepp T, Leible S, Ehret P, Gipp B. Overview of licensing platforms based on distributed ledger technology. In: *Proceedings of the 52nd Hawaii International Conference on System Sciences*, Wailea HI, USA, January 8–11, 2019. pp. 4675-4684.
7. Li N. Combination of blockchain and AI for music intellectual property protection. *Comput Intell Neurosci*. 2022; 2022 (1): 4482217.
8. Boukis A. Exploring the implications of blockchain technology for brand–consumer relationships: a future research agenda. *J Product Brand Manage*. 2019; 29 (3): 307–320.
9. Strebing A, Treiblmaier H. Disintermediation of consumer services through blockchain? The role of intermediary brands, value-added services, and privacy concerns. *Int J Inform Manage*. 2024; 78: 102806.
10. Galati A, Adamashvili N, Sabbagh P, Fiore M. Do blockchain-based innovative solutions improve wine brand loyalty? A case study of a winery in Mendoza, Argentina. In: Galati A, Vrontis D, Thrassou A, Fiore M, editors. *Agribusiness Innovation and Contextual Evolution, Volume II: Technological, Societal and Channel Advancements*. Cham, Switzerland: Springer International Publishing; 2024. pp. 235–257.