

Journal of Peace, Development and Communication



Volume 08, Issue 02, April-June 2024
 pISSN: 2663-7898, eISSN: 2663-7901
 Article DOI: <https://doi.org/10.36968/JPDC-V08-I02-17>
 Homepage: <https://pdfpk.net/pdf/>
 Email: se.jpdc@pdfpk.net

| | |
|-------------------------------|---|
| Article: | Harnessing Artificial Intelligence for Personalized Content Delivery in Media: Opportunities and Risks |
| Author(s): | Farzeen Zahra Faculty & Researcher, FAST National University of Computer & Emerging Sciences, Islamabad & Shaheed Zulfiqar Ali Bhutto Institute of Science & Technology, Islamabad |
| Published: | 20 th June 2024 |
| Publisher Information: | Journal of Peace, Development and Communication (JPDC) |
| To Cite this Article: | Zahra, F. (2024). Harnessing Artificial Intelligence for Personalized Content Delivery in Media: Opportunities and Risks. <i>Journal of Peace, Development and Communication</i> , 08(02), 243–254. https://doi.org/10.36968/JPDC-V08-I02-18 |
| Author(s) Note: | Farzeen Zahra is a Faculty Member & Researcher at FAST National University of Computer & Emerging Sciences, Islamabad & also at Shaheed Zulfiqar Ali Bhutto Institute of Science & Technology, Islamabad Email: farzeen.zahra1@hotmail.com |

ABSTRACT

The multiplying of digital media intake has smoothed the approach for ‘made to order’ content provision assisted by Artificial Intelligence (AI) technologies. This research article explores the opportunities and risks related to using AI for tailored content provision in media. The study conducts a complete Literature review of existing researches, industry reports, and case studies to interpret the prospective benefits and challenges innate in this emergent model. Primarily, the article examines the opportunities given by AI-driven modified content delivery, like improved user engagement, bigger content relevance, and better profitable policies for media companies. Contrariwise, the article also discusses the inherent risks accompanying AI-driven tailored content distribution. It further considers the concerns surrounding the corrosion of critical thinking skills in such futuristic environment ruled by algorithmically curated content.

Key words: Artificial intelligence, personalized content, content delivery, digital media.

Introduction

The umbrella term "artificial intelligence" incorporates countless interrelated technologies. AI includes a range of technologies capable of performing or improving tasks, analyses, interactions, and decisions typically reliant on human intelligence, known as 'cognitive intelligence'. With constantly changing behaviors to improve results, its significant characteristic lies in its ability to learn from datasets and tasks (Deloitte, 2017; Quantum, 2017). For the potential business applications of cognitive technologies, surveys from the industry reveal high interests between business leaders. Due to the inescapable spread Social media and mobile technologies, marketing experts grapple with the advent and use of big data, toiling hard to control the immense collection of data for understandings. AI is likely to undertake a progressively fundamental part in marketing and media environments, as per the expansion of the volume, diversity, and velocity of "Big Data" (Forrester, 2017).

Objective - Significance of This study

Aim of the study is to review the potential influence of Artificial Intelligence in Media, specially in the realm of content creation and distribution. The scope of the study has been narrowed down further by scrutinizing the media advertising particularly. Reviewing at all the possible opportunities and challenges that had been overlooked in the past studies, the paper is significant for a detailed review of controlling AI with respect to content creation and distribution.

Literature Review**AI as New Reality**

Through computational means, AI provides a firm foundation for the normal check and renewal of a number of features of intelligence. The prospect of machines overriding humanity in intelligence including the displacement of human labor by machines impacting individuals' independence, mainly relating to their freedom and security, Ganascia (2018) highlights all possible risks.

Be it delivering informative, educational, entertaining, and marketing content, AI is taking a significant role. In order to decrease possible weaknesses and biases, building trust in AI stands as a key concern upon centralizing the future developments. IBM (International Business Machines Corporation) has highlighted four basic components for credible AI systems (Mojsilović, 2018): Fairness, robustness, explainability and provenance.

A major challenge in media industry is reducing the frequency of bias to an acceptable degree in media delivery. Deliberate or involuntary bias have frequently carried in Public-facing information ultimately deviating from accuracy. Built on predefined algorithms, unlike human creators of media content, AI decisions continue to be subject of constant analysis and correction. However, despite thorough control measures, given the power of editors and supervisors whose bias, prejudice shape the final output, AI-generated products within the media may not be completely free from bias.

AI and its Utility in Social Networks

Known as the media of the modern era: 'New media', connect its chief communicating skills to offer cost-effectiveness along with excelling spatial and sequential restraints eventually prompting a virtual kingdom. As per Henry (2019), ease of access, speed of retrieving data, and storing capability create the simple factors which define 'new media'. Factually, VR, abled (intelligent) structures, and computerization slowly replace many features

from the industry and human contact ultimately leading to an all-inclusive development. Whereas, computer programs, on the other hand, allow users to enhance the physical world by using objects that are digitally generated.

AI has influenced the user base of social networks by expanding it. Rangaiah (2020) explains that the continuous growth of Facebook can be recognized with its understanding and operation of user behavior data being improved by its widespread database and refined techniques like: Deep learning, deep text analysis and face recognition

Moreover, for content broadcasting, platforms like these have advanced into effective channels, leaving the role of content providers for traditional media entities (Trattner et al., 2022). Responsible media houses must reinforce their stance by emphasizing their relative benefits which includes the dependability of information sources and adherence to ethical morals, under this dynamically created environment. Furthermore, in order to cater to the priorities and expectations of their target audience, content personalization must be obstinately pursued.

Present-day AI tools offer numerous opportunities to encourage viewers and transform followers into prospective customers using activities like (Kaput, 2021): Creating social media posts, improving campaigns run on social media, using advanced analytics recognizing posts that are high-performing, aiming particular audience groups, producing advertisements and checking brand as well as trend performance using various social media platforms.

On the other hand, the security risks related to such communication, particularly concerning inaccuracy compared to traditional media has been warned by Sančanin (2019). It is not significant enough to hamper the growing usage of social linkages in the future, despite having such a notable deficiency.

AI in Modern Journalism

In order to generate media content by transforming data into videos, images and texts; AI typically uses algorithms. within literary circles, it's called programmed journalism. On a large scale, it is mainly not implemented as it poses serious threats to the loss of journalistic and editorial positions, along with the challenge of controlling the spread of false content. Innovative AI approaches are more and more incorporated into hybrid workflows that merge human creators with AI technology. This addition is made apparent via analysis and construction of different media content, which includes tasks like data classification, news configuration, comment displaying, and fact-checking (Trattner et al., 2022).

According to AP's analysis favoring AI adoption in newsrooms, two convincing arguments have emerged: liberation of journalists from monotonous tasks and enrichment of their capacity to understand massive amounts of data (Schmidt, 2017).

Heliograph software has been used by the Washington Post to report on Rio Olympics in 2016. At first, WP conducted data analysis, then expressions with relevant story templates to generate an automatic narrative was used. Chief advantage was the easiness of sensing glitches in the data.

Covering daily news, the BBC asserts a considerable pool of data, features, and videos. It used a tool that helped in tracking sources, extracting study journals and research papers from the BBC and many other media houses that operate globally, and finally sorting related stories with simultaneous division into locations, individuals and organizations. (Cognixia, 2019).

As highlighted by the EBU: European Broadcasting Union, in 2019 talked about the effects of the fourth wave of digital transformation on public media journalism in terms of service. opportunities and threats are posed by the use of data technology and Artificial Intelligence under this new wave. An increasing number of individuals admit AI's potential to improve journalism's value and appeal to audiences despite having problems and unreciprocated questions.

Methodology

The current study is undertaken to cover related articles published under the time range of 2010 and 2022 using the deductive reasoning principle. Presenting a transparent and ordered framework for systematic reviews, the use of PRISMA method additionally highlights the application of deductive principles. With predefined terms enhancing the crux of the research inquiry, the keyword design and inclusion criteria follow the deductive reasoning.

Furthermore, the selection process embodies logical (deductive) reasoning by contraction of the emphasis to 61 potential research studies, encompassing screening and elimination criteria. Besides, the final classification of articles into different categories focusing on artificial intelligence, theoretical advancement, and emerging media landscapes also demonstrates a similar reasoning process. It facilitates an all-inclusive investigation of the risks and challenges related to the incorporation of AI in the media industry.

Why PRISMA Methodology for this Study?

Lately, PRISMA has been considered as most powerful tool for review. By ensuring parameters like *Systematic Approach, Standardization, Transparency, Meta-Analysis, and Publication quality*.

Eventually, it stands as the most effective tool today as it promotes the quality and credibility of the review findings in full essence.

Plan for the Literature Review Plan using PRISMA Methodology

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses methodology is aimed to enrich and ensure transparency and usefulness was used in review processes. An organized and structured methodology to conduct systematic reviews and meta-analyses was ensured using PRISMA. It eventually minimized bias, and maximized the quality of produced evidence. Four electronic databases, namely: ABIProQuest, PsycINFO, EBSCO, and Science Direct was ingrained in the twofold contemplations of comprehensiveness and resource efficiency. Resultantly, including these databases further enhanced strong credibility and relevance of the final deductions.

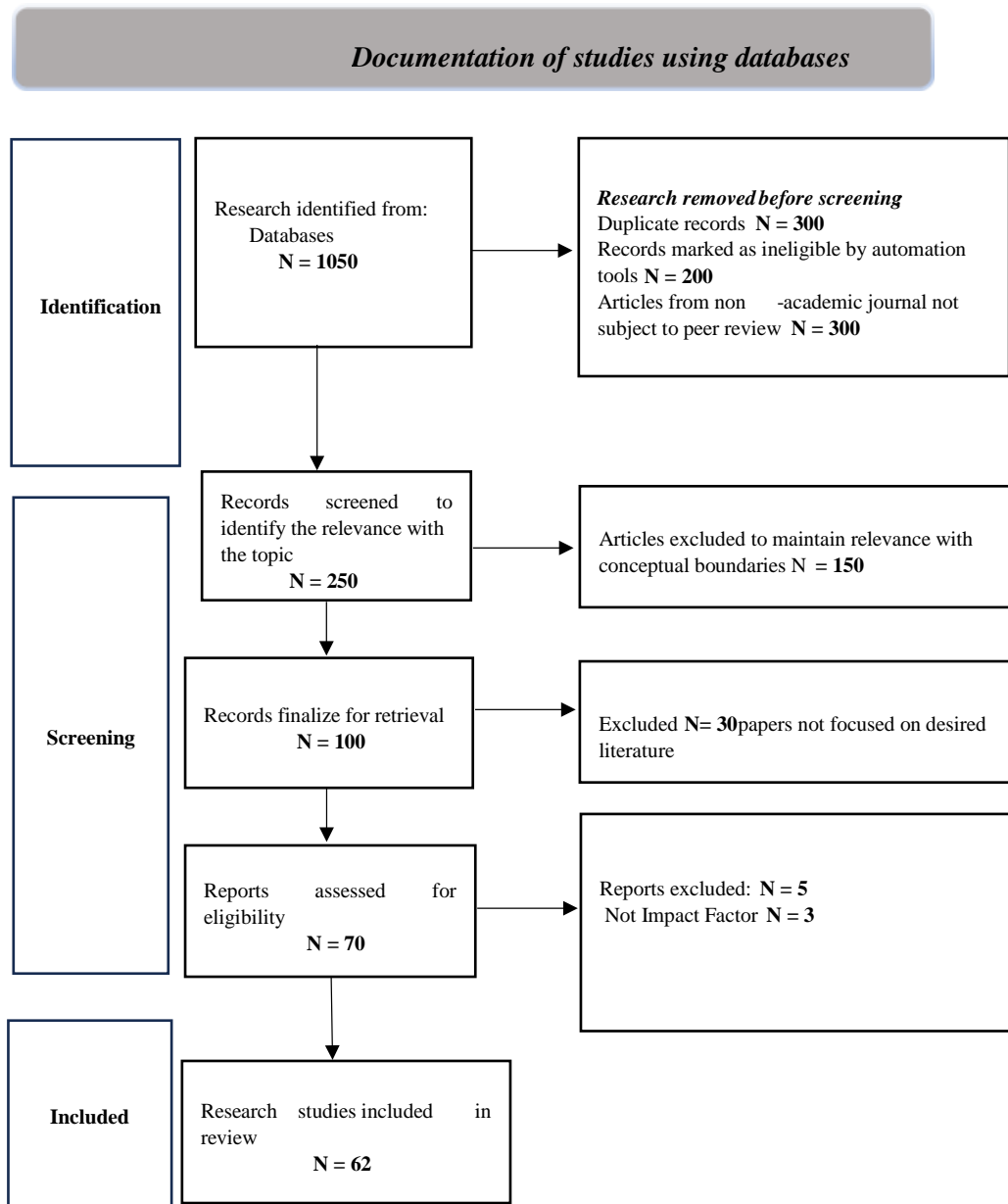


Figure 1: PRISMA of Selection Methodology

Results and Discussion of the Results

Applications of Artificial Intelligence and Uses in Media

With the prospective to improve media companies' predictive, perceptual, and cognitive capabilities, the analysis indicates that AI media applications have been implemented across eight key functional domains (Agrawal et al., 2019; Brynjolfsson & McAfee, 2017). Although few of the applications accommodate further to media consumers (the demand side), few concentrate on the core operations and policies of media enterprises (the supply side). Additionally, some applications are pacing up the domain for content creators, whereas rest are focusing towards the distribution of content (e.g. content discovery), with having very few catering to the two sides of group. Companies like Netflix and The New York Times are vigorously adopting intellectual technologies tend to be news aired online and video platforms is further revealed by the analysis.

Content Recommendations for the Audience and Content Discovery

Netflix, the forerunner media technology firm is pioneering the incorporation of algorithms into numerous audience-centric decisions is known for its utilization of Artificial Intelligence in providing suggestions for the content and discovery. Lynch (2018) highlights, the core of the brand Netflix orbits around distributing personalized content with AI support. Netflix works by customizing algorithms to modify each subscriber's user experience individually like visuals for each movie, incorporating the selection of homepage rows and titles within those rows, and suggestions for additional related content.

To improve content delivery to their target groups, news and audio companies have also included AI technologies, particularly those related to Natural Language Processing (NLP), apart from its addition to video content. Quartz is a great example that has investigated with a media and news app using NLP to curate articles relating to exact events, individuals, or topics (Cramer, 2017). Correspondingly, in the world of audio, podcasts and on-demand content from radio stations are used now by NLP assisting appropriate searches for timeless and everlasting content and aids in audio detection.

Characterized by an abundance of offerings, AI-led content recommendations and innovations play a crucial role in promotion audience satisfaction and engagement within an on-demand content landscape. Modern-day consumers, especially millennials (Chadha, 2019) particularly prefer visual search and discovery functionalities.

Audience Engagement

In order to improve interactions with audiences, Cognitive technologies have been used in 3 main domains: timely assignation, contextual interfaces, and artificial intelligence powered assistants. To provide readers with a continuous means of quickly catching up with ongoing stories by delivering relevant background information and added details upon request, the Washington Post's Knowledge Map uses intellectual technologies to associate vast and complicated data.

Likewise, Chatbot functionality have been utilized by the Guardian, one of the leading news organizations on Facebook to aid consumers in searching for news' stories. With the help of AI technologies, the increasing acceptance of voice-based virtual assistants have become very famous in facilitating smart interactions with audiences, allowing content search, discovering, and navigation by understanding emotions, linguistic distinctions, and user intent. With chatbots, sports bodies, for example the NBA league have embraced Artificial Intelligence on websites and social media, providing game information, statistics, and ticket sales inquiries (Cormack, 2018). Facilitated by AI-powered platforms, greater audience engagement within contextual, real-time environments, has the potential to develop a deeper audience-media brand relationship in present uneven media environment.

Content Management

AI also offers a range of functions relevant to media content. For example: content collection, extraction, tagging, and monitoring, all of which help to improve human decision-making, ultimately, increasing the effectiveness and efficiency of the processes involved in content management. Such method enables BBC journalists to prioritize reporting above content management. Content management via AI definitely seem like to be a major and quick use among media houses. A review from industry shows that 47% of respondents apply Artificial Intelligence for the creation of automatic metadata, producing and assigning metadata tabs to pins in order to rationalize content hunts and fast-track clip recovery. Such a practice

had so far been crucial for media houses with wide-ranging media content collections. As a matter of fact, engaging AI for this purpose, 77% of companies with huge libraries full of content are identified (Mayeda, 2018).

Content monitoring, quality control and identification is another aspect of content management. Revealed by the same survey, 36% of media companies operate through AI for quality control and determining the data size, quickening the procedure of analyzing videos for inaccuracies, gaps in editing, exclusions, and some other problems (Mayeda, 2018). Categorization of comments based on toxicity/sentiment, The New York Times employs Perspective API (Underwood, 2018).

Creation of Content

Artificial Intelligence also plays a vital role in content creation in media. Besides, content detection can be done by Artificial Intelligence that deals with the most promising Return on Investment (ROI). A number of tasks like identification of the plot, selection of the scene, and writing scripts for post-production activities can be automated using AI. Hollywood studios is one example that has applied AI for translation of content and trailer production, concentrating mainly on essential plot features (Bragg, 2018). To extract meaning from data for storytelling, Natural Language Processing (NLP) is used, besides other algorithms designed for data visualization.

For the Fox horror film "Morgan", IBM Watson generated a cognitive movie trailer (McNevin, 2017).

Machine Learning (ML) and NLP were utilized to develop a cognitive advertisement for Toyota by the Weather Company.

In a system aimed at independently learning the link amid the typically generated sounds and images (e.g., the sound of a car engine when depicting a car), Disney Research has made further investments. To serve particular audience sectors, the consequences of these type of research activities are anticipated to be smeared in the systems of sound effects.

AP: Associated Press uses computerized (automatic) writing technology to generate stories and cover minor league games like baseball as regards to the news content creation (Alpert, 2016). To increase its election coverage, the Washington Post has been using a software for data analysis named Heliograph. Headline writing tools called Bandito had also been used by The Post (Alpert, 2016). collaboration has also been done on developing automated news feeds comprising machine-generated data-centric stories by startups like Money.net and Controvert Media (Alpert, 2016). An NLP platform: Automatic Insights which makes human-like descriptions using data to produce stories was incorporated by Yahoo Sports.

For real-time data visualization to deliver data-driven news stories, Semantic technology called Graphiq, was used by Reuters utilized. Use of various templates to produce news content and gathering pertinent data and keywords to produce content which very much exceptional, Associated Press and Forbes utilized AI (Bernazzani, 2017). Getting suggestions about article topics dependent on writers' preceding studies and to suggest headlines created using image emotion, Forbes engaged Artificial Intelligence.

Moreover, to create initial article drafts for contributors to refine, Forbes has incorporated an Artificial Intelligence based story-writing tool (Willens, 2019). Hence, with humans focusing on deeper insights and machines delivering comprehensive, data-driven, and

timely content, AI applications in this particular domain have eased a more efficient segment of content creation.

Audience Insights

Greater audience engagement often starts by obtaining deeper insights among the audience. This application chiefly centers around on making an effective media strategy rather than aiding the audience straight away. Let's take the example of AI assisting in improved modelling and acknowledgement tracking in the sector of audio (Cramer, 2018).

Research with numerous ad platforms and enhanced targeting effectiveness due to the analysis of data gathered from audience, AI assisted PPC: pay-per-click advertising can reveal novel advertising channels. Using consumer data to align with their likings and interests, online media platforms can modify personalized website experiences. customer insights driven by AI play a pivotal role in various marketing decisions. For instance, incorporating factors like geographic events, on-site interactions, referral sources, psychographic traits, purchase patterns, and previous communications; marketing professionals have utilized Artificial Intelligence algorithms to develop client personas founded on extensive datasets, in this manner, they were able to customize media promotions for diverse consumer divisions (Karlson, 2017).

Challenges in AI Media Application

AI implementations in media exposes some underlying challenges. Alongside the need to govern AI's advancing capabilities with foresight for future implications and societal welfare, maintaining the balance between human intellect and artificial intelligence is of chief concern. As formerly reflected, these challenges highlight the discourse on human-machine interaction and ethical problems in relation to AI. The known challenges come from the recurrent themes observed in the data and the threats discovered in significant literature and practical frameworks.

Corresponding (Balancing) Between Human Judgement and Artificial Intelligence

In 2017 cognitive survey of Deloitte's made prominent some primary challenges of cognitive technology. Tracked by cost concerns plus managerial ability, it highlighted the absence of business integration problems with prevailing processes and systems (Deloitte, 2017). Importance of algorithmic literacy, transparency, and oversight was emphasized by The Pew Center's AI report (Rainie & Anderson, 2017). Change management becomes important when AI is introduced into operational systems and processes. Encompassing deeper analysis to make more difficult and thoughtful decisions, adaptability is required by human roles in an AI-driven environment.

Reality check of evolutionary vs. revolutionary AI

Typically handling well-defined tasks rather than making complex decisions is crucial to recognize. Furthermore, with numerous applications and vendors targeting particular problems, the AI environment remains fragmented. In so far, an evolutionary rather than a revolutionary shift is represented by cognitive technologies. Before AI can handle the artificial, intricate judgment capabilities of humans, the media industry has as of yet, a substantial approach to go. Rather than absolute replacement, AI's prime value in media remains with improving functionality.

Moreover, any existing biases or predispositions are encoded into the system's parameters by humans, AI doesn't develop its own opinions rather. Hence, in the design process

of these applications, maintaining human objectivity is essential. Accepting the evolutionary nature of Artificial Intelligence while executing softwares that authorize human minds to generate efficiently is the biggest challenge for media houses.

Conclusion

In the likely future, possibility of digital media developing into emotionally intelligent media, assisting the predictions that technological advancements will exceed those of the 20th century, which mainly included the invention and introduction of TV, radio, and the internet.

Certainly, assisting considerable developments in inventive and innovative media production centered on extensive databases. the application of AI opens opportunities for greatest change of available media offerings.

Considering the expected demands of the media industry while undertaking to lessen potential risks and striving for zero tolerance, future integrative research activities must aim to promote the practical applicability of AI.

Media enterprises must confront several hurdles in order to harness the use of AI. They must have a balance between human and machine intelligence and interactions, through experimentation with personalized products and delivery methods; audience engagement must be prioritized, and encourage the expertise and insights essential for seamless integration of Artificial Intelligence in their current system and procedures.

In so far, this review adopts an investigative and expressive approach, with narrowed dependence on proven and established persisting constructs or literature from academia. The objective of this paper is to provide an all-inclusive examination of a critical subject in media management. With the incorporation of more prime and basic sources of data from various media houses and entities or concentration on particular areas of application to explore the correlation between the adoption of Artificial Intelligence and market consequences, the future research endeavors could be further carried forward.

References

- Branković, S. (2017). Veštačka inteligencija i društvo. *Srpska politička misao*, 56(2): 13-22. <https://doi.org/10.22182/spm.5622017.1>
- Ćitić, T. (2020). Veštačka inteligencija u medijskim sistemima – radio i televizija. *Sociološki pregled*, LIV(4): 1329-1345 <https://doi.org/10.5937/socpreg54-29621>
- Henry, R. (2019). Role of Artificial Intelligence in New Media (Technology based perspective). *CSI Communications*, 42(10): 23-25.
- Marconi, F. (2020). *Newsmakers: Artificial Intelligence and the Future of Journalism*. New York: Columbia University Press. ISBN 978-0-231-19136-4
- Ouchchy, L., Coin, A., & Dubljević, V. (2020). AI in the headlines: the portrayal of the ethical issues of artificial intelligence in the media. *AI & Society*, 35: 927-936. <https://doi.org/10.1007/s00146-020-00965-5>
- Plenković, M. (1980). *Demokratizacija masmedija*. Zagreb: Centar za informacije i publicitet.
- Sadiku, M., Ashaolu, T., Majebi, A.A. (2021). Artificial Intelligence in Social Media. *International Journal of Scientific Advances*, 2(1): 15-20.
- Sančanin, B. & Čerović, S. (2021). Upotreba društvenih mreža u procesu regrutacije ljudskih resursa. *CM: Communication and Media*, 16(50): 281-307. <https://doi.org/10.5937/cm16-33801>
- Sančanin, B. (2022). Etički aspekti upotrebe društvenih mreža u procesu zapošljavanja. *Trendovi u poslovanju*, 10(1): 77-85. <https://doi.org/10.5937/trendpos2201079S>
- Sundar, S. (2020). Rise of Machine Agency: A framework for Studying the Psychology of human – AI Interaction (HAI). *Journal of Computer-Mediated Communication*, 25: 74-88. <https://doi.org/10.1093/jcmc/zmz026>
- Trattner, C., Jannach, D., Motta, E. et al. (2022). Responsible media technology and AI: challenges and research directions. *AI Ethics*, 2: 585-594. <https://doi.org/10.1007/s43681-021-00126-4>
- Internet sources
- Abebe, R. (November 29, 2018). Why AI needs to reflect society. *Forbes*. Retrived December 17, 2022, from <https://www.forbes.com/sites/insights-intelai/2018/11/29/why-ai-needs-to-reflect-society/?sh=2b59080450c0>
- Beckett, C.: New powers, new responsibilities: A global survey of journalism and artificial intelligence. (2019). Retrived December 18, 2022, from <https://blogs.lse.ac.uk/polis/2019/11/18/new-powers-new-responsibilities/>
- Bhandari, K. (2020). *Artificial Intelligence: The Game Changer in Media & Publishing*. Nagarro, USA. Retrived December 12, 2022, from <https://www.nagarro.com/en/blog/artificial-intelligence-ai-game-changer-media-publishing>
- Cognixia. (2019). Rise of artificial intelligence in modern journalism. Retrived November 11, 2022, from <https://www.cognixia.com/blog/rise-of-artificial-intelligence-in-modern-journalism/>
- Ganascia, J.G. (2018). *Artificial intelligence: between myth and reality*. UNESCO. e-ISSN 2220-2293 Retrived December 5, 2022, from <https://en.unesco.org/courier/2018-3/artificial-intelligence-between-myth-and-reality>

- Kaput, M., (2021). AI for Social Media: Everything You Need to Know. Retrived December 19, 2022, from <https://www.marketingaiinstitute.com/blog/ai-for-social-media>
- McCarthy, I. & Kunova, M. (2021). How artificial intelligence can help solve journalism's problems. Retrived December 20, 2022, from <https://www.journalism.co.uk/news/how-artificial-intelligence-can-help-solve-journalism-s-problems-/s2/a825693/>
- Mojsilovic, A. (2018). Factsheets for AI Services. New York: International Business Machines Corporation (IBM). Retrived November 15, 2022, from <https://www.ibm.com/blogs/research/2018/08/factsheets-ai/>
- Radio-televizija Srbije. (26. jun 2020). Veštačka inteligencija neće zameniti novinare, ali novinari moraju da nauče da je koriste. Dostupno na: <https://www.rts.rs/page/magazine/sr/story/1882/tehnologija/3998976/vestacka-inteligencijanovinarstvo-medjuzavisnost.html> (19. decembar 2022).
- Rangaiah, M. (2020). Role of Artificial Intelligence (AI) in Media Industry. Retrived October 25, 2022, from <https://www.analyticssteps.com/blogs/role-artificial-intelligence-ai-media-industry>
- Schmidt, T. (2017). Smarter Journalism: Artificial Intelligence in the Newsroom. Retrived October 30, 2022, from <https://en.ejo.ch/ethics-quality/smarter-journalism-artificial-intelligence-newsroom>
- The European Broadcasting Union – EBU. (2019). News Report 2019 – The next Newsroom: Unlocking the Power of AI for Public Service Journalism. Retrived December 10, 2022, from https://www.ebu.ch/publications/strategic/login_only/report/news-report-2019
- World Economic Forum (2022). Generation AI: Developing Artificial Intelligence Standards for Children. Retrived December 20, 2022, from <https://www.weforum.org/projects/generation-ai> sIS/Presentations/21