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USE OF ARTIFICIAL INTELLIGENCE FOR THE GENERATION OF MEDIA CONTENT

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Abstract: Artificial intelligence (AI) is a powerful catalyst that enables media organizations to optimize and improve their operations. The aim of the paper is to emphasize the importance and potential of AI during high-performance data analytics and media content generation. The focus is on responsible and ethically acceptable use of AI, which imposes the need to continuously build trust, through numerous challenges, during the management of potential risks. Standardization and mandatory publication of AI product data can pave the way for increased transparency and trust building. Otherwise, the power of AI, which has a huge potential to contribute to a better quality of life, could be transformed into a suicide tool.

Keywords: *artificial intelligence, media, ethics, security, and reliability.*

Introduction

Artificial intelligence (AI) is a branch of computer science that deals with the ability of a machine to imitate intelligent human behavior. It has the potential to help solve some of the world's most challenging social problems (Sadiku et al., 2021). Predicting future trends in the media industry is one of the biggest challenges, not only because of the number and variety that are conditioned by technological changes, but also because of the increasingly demanding media audience that expects personalized content. In this context, the role of AI, with its huge amount of data and analytics, occupies a key position at every stage of the value chain (Bhandari, 2020):

- *The role of AI in content creation* – Predictive analysis of consumed viral media and sentiment analysis of consumed owned media can provide guidance on future content trends;
- *The role of AI in content aggregation* – AI-driven automatic tagging of media metadata can help connect different media and identify appropriate content;
- *The role of AI in content distribution* – AI can be used to recommend the right content, in the right format and at the right time, to audiences to increase engagement;
- *The role of AI in content consumption* – Based on content consumption analysis and sentiment analysis, future trends can be rediscovered or enhanced.

By knowing what individuals want to see in the future, and correlating with their preferences, AI can enable media and publishing companies to make relevant investment decisions in creating appropriate content for their audience.

AI can create conditions for identifying potential subscribers, and thus contribute to the financial empowerment of the media, whose stability and development is positively correlated with the number of subscribers and ads. With the changing focus of interest, media companies are given the opportunity to create enhanced options to retain existing subscribers and advertisers.

Pointing out that the media already started to apply the technology of "intelligent enterprises" at the beginning of the 21st century, Ćitić (2020: 1331) states that in 2020 the SAP (*Systems Applications and Products in Data Processing*) platform was represented in 151,000 companies, in 188 countries, combining database and memory processing, providing libraries for planning, word processing, forecasting, spatial and business analytics.

Using AI to process and analyze data at the source of its collection, provides media organizations with the advantage of collecting, analyzing and taking action in real time, as well as predicting what is to come. It is a powerful platform that provides organizations with a significant competitive edge in innovation, creativity and numerous performances in the dynamic and changing media market.

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Media coverage of issues related to the use of AI has the potential to drive public discourse ranging from new technologies to ethical issues. Studying the way in which the ethical issues of AI are presented in the media can lead to better insight into the potential consequences of the development and comprehensive regulation of AI application. There is research that suggests that the media has a fairly realistic and practical focus in reporting on AI ethics, but that coverage is still insufficient and superficial. Authors Ouchchy, Coin and Dubljević (2020) emphasize the necessity of a multifaceted approach to solving social, ethical and political issues of AI technology. This includes increasing the availability of accurate information, to the public, in the form of fact sheets and ethical statements on trusted websites, followed by cooperation and inclusion of ethics and AI experts in research and public debates, as well as consistent government policy or regulatory frameworks for AI technology.

Ever more medias are accepting the inevitable changes that are redefining business activities, to a great extent, by using advanced technology to publish more and better content. Of course, it is not just about textual content, voice cloning for online media is increasingly being used through hybrid workflows. In this manner, the fact that AI is an ally, and not a substitute, for journalists is accepted. Essentially, the work of journalists will not change, but it is realistic to expect that the way they deal with their demanding and complex business activities will change rapidly.

1. AI as a new reality

AI represents a stable basis for rational analysis and reconstruction of most dimensions of intelligence, with the help of computers. Fear of ethical risks stems from the fact that machines exceed our cognitive abilities. Ganascia (2018) differentiates possible risks into those related to lack of work, given that it can be performed by machines instead of people, followed by consequences on the autonomy of individuals, especially in terms of freedom and security, and then overtaking humanity which would be replaced by "more intelligent " machines. However, it should be noted that, at least for now, work is not disappearing, but changing and requiring new knowledge, skills, and personalities. In addition, if we look objectively at the autonomy and freedom of individuals, we can notice that the guarantees of their preservation are found in maximum and continuous vigilance and pre-prepared responses to potential unwanted circumstances.

Recognizing the unstoppable process of globalization, the dynamic and changing media market, AI plays an increasingly important role in the implementation of informative, educational, entertaining, but also advertising content, based on the value of leased space and/or time, as well as on the basis of comparison with other media.

Establishing trust in AI is one of the key issues on which future development will be built, in order to reduce potential vulnerability, and bias, to zero. IBM (*International Business Machines Corporation*) company, which operates in more than 170 countries, constituted elements that form the basis for reliable AI systems (Mojsilović, 2018):

- *Fairness* – AI systems should use training data and models that are unbiased, to avoid treating certain groups unfairly;
- *Robustness* – AI systems should be secure, not subject to manipulation or compromise of the data, for which they are trained;
- *Explainability* – AI systems should make decisions or suggestions that can be understood by their users and developers;
- *Provenance* - AI systems should contain details of their development, implementation, and maintenance so that they can be audited throughout their life cycle.

Bringing down the level of bias, in media discourse, to an acceptable level is a big challenge faced by the media: information intended for the public is often, intentionally, or unintentionally, tinged with bias, that is, misleading, instead of fact-based. Unlike the creators of media content in traditional and digital media, AI decisions are subject to continuous control and correction based on an established algorithm. However, despite the large number of variables, the products of AI in the media industry are not absolutely devoid of subjectivism and bias, considering that the final products are strongly influenced by editors - supervisors, i.e., their subjectivity, prejudices, and biases.

Whether it is a human or a machine that writes reports, the process must be transparent, that is, someone must be responsible if the public is to believe the story. However, computers

can also be biased and the reason is that we still live in a human-driven world where data reflects human activities, including our biases and mistakes. In order to demystify this problem, openly pointing out data limitations has been suggested (McCarthy & Kunova, 2021).

Abebe (2018) acknowledges that AI has the potential to solve a range of problems and challenges, but points out that there is a growing disconnect between the people who introduce and adopt AI-based solutions and those who set policies, for whom and how these solutions are implemented. The author substantiates the claims with the existence of algorithmic bias in the AI system, where machine learning algorithms, are created according to data, to reflect conspicuous historical discrimination through replication, even magnifying it. The problem is recognized in an inadequate focus on the contribution of AI that improves the lives of marginalized communities and economically vulnerable populations, whose interests are not sufficiently visualized by society.

Devices that support AI have greater possibilities for manipulation and cause addiction in users, with children being the most vulnerable category. In the absence of precise and unambiguous recommendations, parents are left to make decisions about products with incomplete information and complex implications for children's health and privacy. In this context, the platform of the World Economic Forum for shaping the future of technological management narrows multiple activities to three strategic pillars (World Economic Forum, 2022):

• Education: it is necessary to develop practical and effective frameworks and tools to educate and inspire children, adolescents, parents and guardians regarding the responsible use of AI;

• Empowerment: Children and youth need to be empowered with AI skills to create their own technology, aimed at improving the world, with an emphasis on underrepresented voices;

• Protection: Establish protections and expand children's human rights and civil liberties when they encounter AI in their homes, schools and public spaces.

2. AI in social networks

New media, or media of the new age, with its most important interactive feature, are not only the most cost-effective, but also allow access without space and time limitations, creating a virtual reality. In addition, an important comparative advantage in relation to traditional media is communication that is realized in real time, through the transfer, processing, storage, and distribution of media content in various formats. Henry (2019) states that accessibility, data access speed, reversibility and storage capacity are the basic parameters that characterize new media. Essentially, computer programs allow users to supplement the real-world environment with computer-created objects, while more broadly, virtual reality, intelligent systems, and automation are slowly replacing various aspects of industry, human interaction, and paving the way for comprehensive progress.

Sančanin and Čerović (2021) point out that the special feature of social media is not only that they enable the introduction of new users, but also that they give companies a new, stronger visibility, which gives practitioners the opportunity to significantly speed up and simplify the segmentation of target groups.

The continuous growth in the number of users of social networks essentially has an increasingly visible influence from AI. The reasons for the continuous rise of Facebook are reflected through the understanding and acquisition of knowledge about user behavior, as well as thanks to the huge database and techniques it uses (Rangaiah, 2020):

• *Deep learning* - this technique is based on understanding the context of images and videos. For example, if cars appear frequently in images and videos, ads with that content will be placed on that insight;

• *Deep text* - is a technique that uses neural networks, with its own algorithm, to analyze words in user posts in order to understand their context and meaning;

• *Face recognition* - this technique enables face recognition on the basis of two or more comparative, different photos.

Large platforms such as Facebook, aggregate content, and services more efficiently than traditional media can, capitalizing on user-generated content and algorithms to transform it predictively. In addition, major platforms now act as powerful channels for content distribution, while traditional media organizations have become content providers for these platforms

(Trattner et al., 2022). In such a created realistic environment, responsible media must strengthen their position by highlighting its comparative advantages, through the reliability of information sources and ethics, as well as to strongly continue with the process of content personalization, according to the wishes and expectations of the target audience.

Other social networks use similar algorithms: thus, Twitter uses AI to mark and remove accounts that detect hate speech or promote extremist groups. Instagram uses a huge database that allows users to more efficiently search for images that prefer their activities and experiences, while Linkedin, as a primarily business-oriented social network, establishes connections with a job recommendation.

Today, tools with AI provide the opportunity to build an audience and convert followers into potential customers through numerous activities (Kaput, 2021):

- Creating posts on social networks;
- Optimizing a campaign on social networks;
- Detecting posts that give the best results using advanced analytics;
- Finding a target group;
- Writing advertisements;
- Measuring brand and trends on each social media channel;
- Social media monitoring;
- Reducing the time and cost of managing social media across different platforms.

Several research studies carried out from 2008 to 2011 in Serbia, which studied the daily time economy of inhabitants, measured the volume of face-to-face communication, which was realized through the Internet primarily via social networks. In 2008, face-to-face communication was 20 times greater than that mediated by the Internet, in 2009 it was 12 times, and in 2011 only 5.5 times. If this trend were to continue linearly, then the duration of face-to-face and communication on social networks and media would equalize by 2024. (Branković, 2017: 10)

Social networks enable direct communication and interactive contact with the target group, i.e., they provide enviable breadth and profitability, as pointed out by Sančanin (2022), who warns that this kind of communication does not provide the necessary security, especially in correlation with control in traditional media. This represents a visible insufficiency but not so significant that it would represent an obstacle for even more frequent use of social networks in the future.

3. AI in modern journalism

AI can use algorithms to create media content through the process of converting data into text, images and videos. In literature, such activities are also defined as automated journalism or robotic journalism, but mass application has been absent due to the objective fear of losing journalistic and editorial jobs, as well as the impossibility of preventing the generation and distribution of false content.

Advanced AI techniques are increasingly present in the design of hybrid workflows between media creators and AI, making that process visible through the analysis and creation of numerous and diverse media contents, starting from marking and selecting data, writing news, modeling comments, all the way to checking fact and content verification (Trattner et al., 2022).

The importance of AI can primarily be confirmed by its relevance in the process of creating multimedia content. Based on predefined criteria and previous experience, the algorithm recognizes visual content that could be acceptable for different textual content.

The AP (Associated Press) agency has identified five areas for journalistically relevant subdomains of AI: machine learning, natural language (processing and generation), speech (text-to-speech and speech-to-text), vision (image recognition and computer vision), and robotics. Practically, AI can enable journalists to analyze data, identify patterns, trends and specific insights, from multiple sources, then convert data and spoken word to text, text to audio and video format, as well as understand feelings, analyze scenes for objects, faces, text or color. In this manner, two significant arguments for the application of AI in newsrooms were profiled: journalists are freed from their daily tasks and their ability to understand more data increases (Schmidt, 2017). Back in 2013, the AP began using AI for its sports news and earnings reports. NewsWhip analytics were used to ensure a position ahead of social media trends

In 2016, the Washington Post used Heliograph software to cover the Rio Olympics. The first step was to analyze data, then merge the expressions with the relevant story template and

create an automatic narrative. The upside was that it was easy to find anomalies among the data.

Reuters extends graphic solutions, i.e., uses data visualization techniques for sports news and entertainment topics. It's a new way of publishing visually stimulating, easy-to-understand data-driven news, using algorithms to continuously create, update and access data.

The BBC has a substantial amount of data from daily news, features and videos, and the tool tracks sources, extracts and articles from the BBC and other global media outlets. Relevant stories are tagged with simultaneous segmentation into locations, people, organizations, and things. (Cognixia, 2019).

Even now, AI can save time during the authentication of photo, audio and video transcripts, and many reports that rely on huge databases. However, it is only the basis on which journalists can check the facts, analyze, and contextualize the collected data, which leads to the conclusion that people must remain at the center of the entire journalism process (RTS, 2020).

Investigating what the fourth wave of digital transformation means for public media service journalism, EBU (*The European Broadcasting Union*) (2019) indicated that the new wave, after online, mobile, and social media, will be defined by the opportunities and threats of AI and data technology. Despite the dilemmas and unanswered questions, more and more people are recognizing the potential of AI to make journalism more valuable and inspiring for audiences.

The report on AI in journalism, based on a survey of 71 news organizations in 32 different countries, showed that AI is already occupying significant positions in journalism, giving media content creators more power and adding greater editorial and ethical responsibility, but unevenly distributed. Slightly less than half of the respondents said that they use AI for news gathering, two-thirds emphasized that they use it for the production of media content, and slightly more than half of the respondents emphasized that they use AI for distribution. Research results have shown that there is a general desire for more efficient work, in order to free up the resources necessary for a more functional newsroom and for new or improved content (Beckett, 2019).

Media transformation, in the new digital reality, constitutes a hitherto insufficiently recognized responsibility towards digital channels and created content. It also establishes new relationships between investment and education of media discourse creators. In addition, Plenković (1980: 38-39) opened a communication dilemma as to whether media, in the public media discourse, should credibly and valuably present creativity in which there is enough space and time for everything, or if the focus should be on one type of creativity. In the first case, the path can lead to media discursive anarchism, while the second impoverished option can subordinate creative creativity to media sponsors and political-managerial pragmatism.

Almost without exception, journalists argue that AI can augment, but not automate, the media industry by enabling journalists to break news faster while freeing up time for deeper analysis. In this sense, Francesco Marconi (2020), who led the development of the use of AI in the journalism of the Associated Press and the Wall Street Journal, offers a new perspective on the potential of these technologies. The author marks the media landscape transformed by AI for the better and emphasizes the constant need for editorial and institutional oversight.

AI and machine learning have been part of the media landscape for several years in the form of a personalization system that adjusts media content based on the user's previous online actions, i.e., based on the digital traces left by the user. In this context of default low privacy, Sundar (2020) points out that rules governing the media behavior of individuals, by machines, can cause privacy concerns and threaten human activity, with personalization (the media system surreptitiously creating content for users) less desirable than adjustments (the user adjusts the desired content himself).

Possible resistance within media organizations regarding the use of AI is a consequence of insufficient recognition of the essence of the problem: journalists are not interested in facts about how AI works, but what it does. The moment newsrooms provide storage space for huge amounts of data and effective tools powered by AI, the transformation of data into narratives will become a reality that cannot be lived without.

Conclusion

It is realistic to expect that in the near future digital media will give way to emotional-intelligent media, thus confirming futuristic announcements that technological progress will

have even greater reach than it had in the 20th century with the advent of radio, television and the Internet.

What is encouraging is that the implementation of AI unlocks the door to the maximum diversification of available media products, and the significant improvement of innovative and creative media creation based on huge databases, as well as the adoption of algorithms, that will ensure an adequate selection of the necessary data from the hyperproduction offer.

The scope of future integrative research should raise the bar of quality and practical applicability of AI, considering the needs and expectations of the media industry, as well as minimize potential risks, striving towards zero tolerance.

AI already has a strong impact on journalism, but it also has, undoubtedly, great potential for thinking about economic viability and proactive action aimed at protecting the public interest, in the media industry, burdened with misinformation and content that lacks credibility and relevance. In such a defined media environment, journalists are expected to maximize the use of tools with AI, in order to focus on their basic work while saving time and money.

References

1. Branković, S. (2017). Veštačka inteligencija i društvo. Srpska politička misao, 56(2): 13-22. https://doi.org/10.22182/spm.5622017.1
2. Ćitić, T. (2020). Veštačka inteligencija u medijskim sistemima – radio i televizija. Sociološki pregled, LIV(4): 1329-1345 https://doi.org/10.5937/socpreg54-29621
3. Henry, R. (2019). Role of Artificial Intelligence in New Media (Technology based perspective). CSI Communications, 42(10): 23-25.
4. Marconi, F. (2020). Newsmakers: Artificial Intelligence and the Future of Journalism. New York: Columbia University Press. ISBN 978-0-231-19136-4
5. 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
6. Plenković, M. (1980). Demokratizacija masmedija. Zagreb: Centar za informacije i publicitet.
7. Sadiku, M., Ashaolu, T., Majebi, A.A. (2021). Artificial Intelligence in Social Media. International Journal of Scientific Advances, 2(1): 15-20.
8. 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
9. Sančanin, B. (2022). Etički aspekti upotrebe društvenih mreža u procesu zapošljavanja. Trendovi u poslovanju, 10(1): 77-85. https://doi.org/10.5937/trendpos2201079S
10. Sundar, S. (2020). Rise of Machine Agency: A framework for Studying the Psychology of human – AI Interaction (HAII). Journal of Computer-Mediated Communication, 25: 74-88. https://doi.orf/10.1093/jcmc/zmz026
11. 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

1. 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
2. Beckett, C.: New powers, new responsibilities: A global survey of journalism and artifcial intelligence. (2019). Retrived December 18, 2022, from https://blogs.lse.ac.uk/polis/2019/11/18/new-powers-new- responsibilities/
3. 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
4. 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/
5. 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
6. 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
7. 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/
8. 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/
9. 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-inteligencija-novinarstvo- medjuzavisnost.html (19. decembar 2022).
10. Rangaiah, M. (2020). Role of Artificial Intelligence (AL) in Media Industry. Retrived October 25, 2022, from https://www.analyticssteps.com/blogs/role-artificial-intelligence-ai-media-industry
11. 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
12. 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

13. World Economic Forum (2022). Generation AI: Developing Artificial Inteligence Standards for Children. Retrived December 20, 2022, from https://www.weforum.org/projects/generation-ai