IMPLEMENTATION OF NEW TECHNOLOGIES WITH ELEMENTS AND TOOLS OF ARTIFICIAL INTELLIGENCE INTO THE TELEVISION BROADCASTING

Mgr. Oľga Dúbravská[1]
Assoc. Prof. Dr. Ján Višňovský, PhD. [2]
[1, 2] Faculty of Mass Media Communication, University of SS Cyril and Methodius in Trnava, Slovak Republic

ABSTRACT

Creating media content in television requires technologies that are specific to this field, and in the current era of newsroom convergence, they are interconnected with the online digital space. The evolution of television technology is very dynamic and today is no longer just about cameras, microphones, lights, and related television technology, but is primarily about hardware and software. The aim of the paper is to highlight the evolution of television technology, which is very dynamic, incorporating elements and tools of artificial intelligence (AI), which also affects some workflows. The paper reflects on the implementation of new technologies in the broadcast of the Slovak private television ta3, their benefits for the recipients, but also for the creators of media content. Television ta3 changed its headquarters and built new studios in new premises. It offers viewers projection on a modern studio LED wall, which is one of the largest in the Czech and Slovak television market. At the same time, it is complemented by a modern high-resolution digital resolution. The production system includes leading technology with AI elements, which has increased the flexibility of television broadcasting.

Keywords: *artificial intelligence, broadcasting, television content, ta3, television*

INTRODUCTION

Artificial intelligence (AI) is the development of computer systems that can perform tasks requiring human intelligence. These tasks include speech recognition, problem solving, learning and decision making. Artificial intelligence technology has made significant advances in recent years, empowering various industries and changing the way tasks are performed. [1] Artificial intelligence (AI) is a new technical science that simulates and extends the theories, methods, technologies, and application systems of human intelligence. [2] In recent years, we have witnessed the emergence of innovative technologies such as artificial intelligence that is reshaping various industries including television broadcasting. The successful implementation of AI in

broadcasting can be seen, for example, in the streaming service *Netflix*, which effectively uses AI algorithms to analyse viewers' behaviour and preferences, allowing it to recommend personalised content to individual subscribers. [3] This has contributed significantly to the success and popularity of the platform. Similarly, YouTube has also leveraged AI technologies to optimise video recommendations and improve user engagement.

THE USE OF ARTIFICIAL INTELLIGENCE IN BROADCASTING

The implementation of AI technologies into TV broadcasting brings several potential benefits. First, AI can increase the efficiency of content production and distribution in broadcasting. AI-powered tools can automate various aspects of content creation, such as video editing, captioning and graphics generation. [4] This can significantly reduce the time and effort required for post-production work, allowing broadcasters to deliver high-quality content faster and more efficiently. In addition, AI can help optimise content scheduling and distribution by analysing audience preferences and behaviour. For example, AI algorithms can identify the best time slots and channels to target specific demographics, ensuring that content reaches the right audience at the right time. Second, AI can revolutionise the advertising industry within broadcast TV. By analysing data and consumer behaviour, AI can generate targeted ads that are tailored to individual preferences. This personalized approach to advertising increases the likelihood of capturing viewers' attention and generating higher click-through rates. Additionally, AI can help advertisers optimize campaign strategies by providing valuable insights into audience engagement and response. Also, AI can help broadcasters understand consumer insights and preferences through advanced technologies such as speech recognition and natural language processing. [5] This enables broadcasters to create more engaging and relevant content that resonates with their target audience. The implementation of AI technologies in TV broadcasting has the potential to significantly improve marketing and advertising strategies.

Another area is audience analytics and viewer engagement. By leveraging AI technologies, broadcasters can gain detailed insights into recipients' preferences and behaviours. This information can be used to create personalized recommendations and suggestions, leading to a more engaging and interactive viewing experience and increased viewership. AI can also help in recommending and editing content. AI algorithms can suggest relevant content that is aligned with their interests and preferences based on the analysis of the recipient's data. This not only improves the user experience but also helps broadcasters retain and attract more viewers. [6]

Another area where AI can have a significant impact is in content creation and production. AI tools and techniques can streamline the content creation process by automating certain tasks such as video editing and post-production.

This saves broadcasters time and resources, allowing them to produce high-quality content more efficiently. In addition, AI can assist in real-time content creation by analysing current events and trends to produce relevant and timely news or segments. AI can significantly improve the accessibility of television broadcasts for individuals with disabilities. By leveraging AI technologies, broadcasters can implement features such as closed captioning and audio description to meet the needs of viewers with hearing or visual impairments.

By leveraging AI technologies, broadcasters can improve the accuracy and efficiency of weather forecasts and provide viewers with timely and reliable information. AI technologies can streamline the content production process by automating tasks such as video editing, audio enhancement and colour correction.

One trend emerging at the intersection of AI and journalism is automated content creation. With the help of AI-powered algorithms, news organizations can now create articles, summaries, and even video reports on breaking events in real time. This automation simplifies the content creation process and allows news organizations to provide timely and relevant information to their audiences.

For example, in the United States, news television networks such as *CNN* and *NBC* have integrated AI elements into their news broadcasts. They use AI-powered algorithms to generate real-time news, analyse datasets and identify patterns to provide accurate and timely information to their viewers. Another example is the use of AI-powered virtual news feeds. These virtual news anchors are computer-generated characters that deliver the news in a realistic manner. [7] They are equipped with natural language processing capabilities and can simulate human-like gestures and expressions. China's state-run *Xinhua News Agency* has unveiled an AI-powered virtual news anchor in China that can deliver news in both Chinese and English. These advances in AI technology have revolutionized the way news television delivers information to its audience. [8] For example, news TV networks in the UK, such as the *BBC* and *Sky News*, use AI algorithms to analyse viewer data and provide tailored news recommendations to their audiences. These personalised news recommendations are tailored to the interests and preferences of each individual viewer, improving their overall news viewing experience.

ARTIFICIAL INTELLIGENCE AND TA3 TELEVISION

As the integration of AI elements into *ta3* television continues to evolve, it is important to consider the future implications of this technology. One possible future development is the increased use of AI-powered chatbots in *ta3*. These chatbots would be able to interact with viewers, answer questions and provide information in real time. In addition, advances in natural language processing could lead to the development of AI-powered translation tools that allow news TV networks to provide real-time translations of news programmes in different languages, reaching global audiences without language barriers.

Another potential future development is the use of AI in fact-checking and verification processes. AI-powered fact-checking tools can analyse the accuracy and credibility of information presented in TV broadcasting. They can quickly detect misinformation or false claims, helping to preserve the integrity of news coverage. AI can automatically flag suspicious or potentially false information in news content, helping viewers distinguish between reliable and unreliable sources.

It can be concluded that the use of AI elements in news television is becoming more and more widespread. This technology allows not only the personalisation of news content, but also the automation of content creation. AI elements have the potential to enhance the overall news viewing experience for viewers and improve the efficiency of news production and dissemination. As news television networks around the world embrace AI elements, the impact on journalistic practices and news production is transformative. As news organizations strive to keep up with the evolving media landscape, elements of artificial intelligence are being used to automate content creation.

Ta3 television is a private news television station that began broadcasting in 2001. At that time, it had already come to market with revolutionary technologies, as it was the first television station in Europe to use tapeless technology in the processing of media content. It had its own A3news editorial system, which was later replaced by the world-famous Octopus integrated with Avid media central cloud UX. This system is used for example by *Czech Television*, *CNN Prima NEWS*, *Sky News*, *Al Jazeera*. It allows remote online access to import and manage media content for broadcast, while also being able to distribute the created audiovisual content to social media and OTT platforms.

Ta3 television implemented AI elements into its broadcast systems back in the summer of 2017 during the transition to HD broadcasting. The AI implementation was mainly pursued to simplify and automate the descriptive metadata of archived video content. The system enables automatic recognition of faces with a timestamp of their occurrence in the archived video.

Another module is automatic scene recognition "scene detection" which helps to automatically detect the type of news video content such as football, hockey, mountains, parliament, motorcycle, car, etc. Scene detection module helps to automatically categorize the video archive and create "labels" (tags), which make it easier for the editor to navigate through the video archive.

Ta3 is currently in the process of implementing a speech to text system that uses machine learning to transcribe the spoken word into text form. The transcription of spoken word to text can be done in real time/online and in the archive. Text to speech allows to read prepared texts in a digital voice with the possibility of using live audio dubbing, live commentary through a speaker, voiceover for the blind, etc. Translate speech translates the spoken word from one

language into multiple languages. It runs in real time, using automatic detection and transcription of the spoken language. It can translate 10 languages simultaneously. This system also uses computer vision, identifies people, objects and can summarize what is in each picture.

CONCLUSION

Integrating AI elements in news television has the potential to revolutionise journalism AI technologies can assist in various aspects of news production and dissemination, including content creation, news gathering, personalisation, storytelling, audience engagement and fact-checking. [9] These technologies can help journalists gather and analyse information from multiple sources, improve personalization of news delivery, enhance storytelling through immersive experiences, and ensure accuracy and quality of reporting. While there are ethical concerns about the use of AI in news television, such as the potential for biased content and the loss of human jobs, the benefits, and potential advances that AI brings to news television are significant. The use of AI can increase the efficiency and effectiveness of news production, allowing journalists to focus on more analytical and investigative tasks. [10] In addition, AI can improve the user experience by providing personalized news recommendations and delivering content in innovative formats such as virtual reality and augmented reality. AI can play a key role in combating the spread of fake news by verifying facts and validating information before disseminating it to the public. Overall, the integration of AI elements in news television has the potential to transform the field of journalism by improving efficiency, accuracy, and user experience. The use of AI elements in news television has brought about significant transformations in the field of journalism. [11]

AI technologies have revolutionized the production and dissemination of news and influenced various aspects of the industry. [12] Advances in AI have led to the automation of news writing, increasing efficiency, and reducing human labour. News organizations are now able to generate articles, summaries, and even video reports on breaking news events in real time using AI-powered algorithms. These algorithms can analyse large amounts of data, extract relevant information, and present it in a format that is easily accessible to audiences.

In addition to automated content creation, AI has revolutionized other aspects of news production and dissemination. For example, AI-powered algorithms can analyse social media trends and user behaviour to tailor message delivery and recommendations. This tailoring of message delivery ensures that audiences receive content that is relevant to their interests, increasing engagement and satisfaction.

One area for further study of AI in broadcast media could be the ethical implications of using AI technologies in journalism. Ethical considerations arise when AI is used to create news content, particularly in areas such as comment

moderation and news writing. [13] There is a concern that AI-generated content may lack the human judgement and ethical considerations that journalists bring to their work. At the same time, there is potential for bias in AI-generated news content, as algorithms may inadvertently amplify existing biases present in the datasets used for training.

Another area for further study could be the impact of AI on newsroom dynamics and journalists' roles. As AI technologies automate various tasks in news production, it is important to explore how this affects the roles and responsibilities of journalists. [14] In addition, the potential displacement of human journalists needs to be considered as AI becomes more advanced and capable of performing complex tasks. Overall, the use of AI elements in news television around the world has significantly changed the way news is generated, delivered, and consumed. The integration of AI technologies into news television has revolutionised the field, enabling automated content creation, personalised news delivery and innovative storytelling methods. This transformation has both positive and negative implications, highlighting the need for further study on the ethical implications of AI in journalism and its impact on newsroom dynamics and the role of journalists. As AI continues to advance and integrate into news television, it is important to assess its impact on the ethics of journalism. [15]

AI technologies have already demonstrated their potential to revolutionise the production and dissemination of news in newsrooms around the world. Intelligent templates generated by AI allow journalists to easily gather and disseminate news on a variety of issues. These advances in AI have led to radical transformations in the field of journalism, enabling increased efficiency and productivity.

ACKNOWLEDGEMENTS

The study is the result of APVV project “Hypermodern Media Culture – Film and Television Production as Mirror of Sociocultural Phenomena of the 21st Century”.

REFERENCES

[1] Shen, Y., Yu, F., The influence of artificial intelligence on art design in the digital age, Scientific Programming, Egypt, 2021, pp 1-10. https://doi.org/10.1155/2021/4838957

[2] Cui, ., Nie, Y., Li, Z., Zeng, J., Construction and development of modern brand marketing management mode based on artificial intelligence, Journal of Sensors, Egypt, 2022, pp 1-11. https://doi.org/10.1155/2022/9246545

[3] Radošinská, J., Kvetanová, Z., Rusňáková, L., Globalizovaný filmový priemysel, Czech Republic, 2020.

[4] Proner, J., Zlatovský, T., Praktické využitie virtuálnej reality, Slovak Republic, 2023, pp 171-181. Available at: https://fmk.sk/download/ZBORNIK-Quo-Vadis_2023_final_2.pdf

[5] Panasenko, N., Greguš, Ľ., Media text in the mirror of linguistics, 2022, Czech Republic.

[6] Magalová, L., Francistyová B., Distribúcia a produkcia produktov internetom distribuovanej televízie Netflix, Czech Republic, 2023, pp 519-528.

[7] Furtáková, L., Dokáže ChatGPT nahradiť moderátora spravodajstva v rozhlase? Slovak Republic, 2023, pp 11-29. Available at: https://fmk.sk/download/ZBORNIK-Quo-Vadis_2023_final_2.pdf

[8] Proner, J., Bôtošová, Ľ., Mičová, S., Ako na mediálne výstupy: praktická príručka pre začínajúcich novinárov, Slovek Republic, 2019.

[9] Greguš, Ľ., Kačincová Predmerská, A., Radošinská, J., Studies in Media and Communication, United States of America, 2022, pp 65-80. Available at: https://doi.org/10.11114/smc.v10i2.5557

[10] Newman, N., Journalism, Media, and Technology Trends and Predictions 2023, Great Britain, 2023. Available at: https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2023-01/Journalism_media_and_technology_trends_and_predictions_2023.pdf

[11] Guanah, J S., Agbanu, V. N., Obi, I., Artificial Intelligence and Journalism Practice in Nigeria: Perception of Journalists in Benin City, Edo State, International Review of Humanities Studies, Indonesia, 2020, pp 698-715. https://doi.org/10.7454/irhs.v0i0.268

[12] Ali, W., Hassoun, M.: Artificial Intelligence and Automated Journalism: Contemporary Challenges and New Opportunities International Journal of Media, Journalism and Mass Communications, India, 2019, pp 40-49.

[13] Pravdová, H. From homo ludens to homo medialis: cultural dimensions of game principles and media, 2022, Czech Republic.

[14] Gálik, S., Vrabec, N., Theoretical concept of media related competencies, Bulgaria, 2022, pp 257-267.

[15] Gáliková Tolnaiová, S., Media and truth in the perspective of the practice and life form of the modern "Homo medialis", Communication Today, Slovak Republic, 2019, pp 4-19.