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AI in Media and News Broadcasting



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Introduction

On March 17th, 2014, a light earthquake struck Los Angeles. Within minutes, Ken Schwencke, a Los Angeles Times journalist and programmer, broke the story. How was Schwencke able to write and publish an article so quickly? The article was actually written by Quakebot, an application created by Schwencke that uses artificial intelligence (AI) to download data from the US Geological Survey website and automatically generate a short article with all the relevant information. Schwencke felt the earthquake, went to his computer, and the story was already written - he simply had to review the article before publishing. By the end of the day, Quakebot's original news story had been updated 71 times by journalists who added additional information and a human touch to create a full-page story.¹ With artificial intelligence, Schwencke was able to break the story on the earthquake before most other journalist had even tracked down the data.

In recent years, numerous industries, including business, the military, entertainment, and media and news broadcasting, have started using artificial intelligence to build efficiencies into their work. The Computer Security Resource Center (CSRC) of the National Institute of Standards and Technology (NIST) defines AI as "The capability of a device to perform functions that are normally associated with human intelligence such as reasoning, learning, and self-improvement."² AI primarily focuses on learning, reasoning, problem-solving, perception, and language-understanding, processes that were previously only possible with human intelligence. In the very human-centered field of communications, AI once seemed like an awkward fit. But in recent years, journalists and media organizations have started to use artificial intelligence to streamline certain processes to help them analyze data faster, fact check stories, and more.

Since Quakebot's landmark story, the use of AI has exploded in media and news broadcasting and is now used by some of the biggest names in the industry – The Associated Press, Reuters, The Washington Post, Forbes, Bloomberg, and more. This white paper will explore the present-day use of AI in media and news broadcasting and consider the future of AI in this historically human-centered industry.

AI in Media and News Broadcasting

Artificial intelligence is currently used by media and news broadcasting agencies in a variety of ways, including the following:

- Automated search capabilities
- Media File specific segment retrieval
- Automated editing
- Content moderation

¹ Oremus, W. (2014, March 17). *First News Report on the L.A. Earthquake Was Written by a Robot*. Retrieved from Slate.com: <https://slate.com/technology/2014/03/quakebot-los-angeles-times-robot-journalist-writes-article-on-la-earthquake.html>

² *Artificial Intelligence*. (n.d.). Retrieved from NIST Computer Security Resource Center: <https://csrc.nist.gov/Topics/Technologies/artificial-intelligence>

- Content research and aggregations
- Content creation
- Fact checking
- Content Tailoring
- Consumer communications

Each of these AI applications create unique opportunities for media and new agencies to improve the efficiency, and in some cases, efficacy of their work.

Automated Search Capabilities

Media organizations make huge investments in their content libraries, but that information is only valuable if it can be found. Keyword searches can be very time-consuming and often require training to use the right phrases, keywords, and search formats to find information without receiving irrelevant information. Google recognized this problem early on and built a system that uses machine learning to train their search engine to assist users with searches.

AI search engines using machine learning, such as Google's, are taught over time to find information customized to the individual user. These search engines are significantly more efficient and effective than a standard keyword search. The search engine can learn what represents a high-quality result with curated documents and materials that "teach" the search engine what type of documents to find. AI search engines can also be trained to anticipate what the user wants and offer *query completion*, where the system offers potential keyword completions based on the initial information provided by the user. AI search engines can also offer *related searches and related articles* that can expand users' results or target specific material from a broader search. AI can also dynamically rank search results by tracking the time a particular user stays on a page and organize pages of interest higher in the list of materials the next time a user searches for a similar item. AI search engines can make it easier for both creators and customers to find the information and content they need quickly and easily.

Media File Specific Segment Retrieval

Finding the right clip of a media file can be time-consuming, but AI makes it easier to search content management systems to find specific segments, including the markers for the first and last frames in the sequence (mark in/mark out). For example, a user can choose a particular part of an individual's speech, and the exact segment can be found using AI. AI enabled systems can also use visual and language searches to find and suggest other segments featuring the same person or similar topics.

Automated Editing

Most of us have experienced automated text editing through spellcheckers, auto-correct features, and applications, such as Grammarly, that help writers avoid misspellings and basic grammar errors. AI enabled text editors can improve automated editing by going beyond the basic rules of spelling, grammar, and style to more nuanced elements of writing, even providing explanations for questioning a particular word or phrase as well as suggestions for improvement. AI editing is not limited to text; it is used to edit all types of media – sound, images, and video. AI editing can

save time and money by doing the initial editing, allowing human editors to do the more exacting finishing touches.

Content Moderation

Different countries have different legislation regarding what may be printed or broadcast in that specific locale. Through functions like image and object analysis, language analysis, and sentiment analysis, AI can assist human moderators, editors, journalists, and broadcasters by detecting adult or prohibited content in audio and images so that these may be edited or eliminated as appropriate.

AI is already being used to prevent spam, inflammatory language, and objectionable material from being included on media websites in reader or customer comments. Products like Perspective API, used by the New York Times, leverage machine learning to determine what comments are more likely to be objectionable or inflammatory. The API gives commenters scores based on a comment's "toxicity" and assist human moderators with prioritizing comment moderation.³

Content Research and Aggregation

AI can also categorize large amounts of data – whether in content management systems, social media, or web articles – and organize them to make research easier. BBC News Labs has been using an AI application, called The Juicer, which collects news content from the BBC and hundreds of other sources, automatically creates tags for that content, and then makes the content available in an API. Reuters uses a program called Lynx Insights to aggregate data to provide insights to journalists.

Content Creation

AI can do more than just provide research and insights. Like with Quakebot, media and news agencies can use AI to actually create content. The Associated Press (AP) found that their journalists spent an inordinate amount of time writing data-driven stories such as financial reports and sports recaps. Limits on time prevented all but the largest sports teams from receiving coverage. To provide more content while freeing up journalists to write important stories, the AP began using Automated Insight's Wordsmith natural language generator to use earnings data and sport stats from data providers to create timely articles.⁴ Natural language generation (NLG) is an AI process that turns data into natural human language. Taking non-language inputs, such as metadata, spreadsheets, or videos, NGL creates outputs, like news reports, that mimic an output written by a human. While the AP has published thousands of

³ Underwood, C. (2019, November 17). *Automated Journalism – AI Applications at New York Times, Reuters, and Other Media Giants*. Retrieved from emerj.com: <https://emerj.com/ai-sector-overviews/automated-journalism-applications/>

⁴ Automated Insights. (n.d.) <https://automatedinsights.com/customer-stories/associated-press/>

articles using Wordsmith, other agencies, such as The Washington Post and Yahoo Sports, use their own NLG systems to produce content. In addition to complete articles, AI can also improve and enhance subtitles and closed captioning and translate existing content into additional languages.

In addition to creating content, AI is already being used to help media executives make decisions on what content to create. Companies like Los Angeles based Cinelytic, Inc. provide analytics and financial modeling services to the film industry. Using machine learning, the software predicts the potential success of a certain script or cast based on previous successes of various films and actors.⁵ Rather than replacing the judgment of seasoned professionals, AI and analytics help filmmakers look at projects differently to see the potential in certain endeavors and identify possible improvements. Choosing the right script and the right cast for a film is critical when millions of dollars are on the line. Analytic tools powered by AI can help make the right choices.

Fact Checking

According to a 2019 survey by the Pew Research Center, most US adults believe that the news media has the greatest responsibility for reducing the amount of fake news.⁶ Fact checking and identifying fake news, is however, a time-consuming process that humans alone would have trouble completing. Luckily, AI enabled systems can help humans identify fake news and factual errors in content. According to Ron Schmelzer, principle analyst at Cognilytica and *Forbes* contributor in AI and Big Data, “AI systems are capable of identifying patterns of real data sources and real news content from those that have been artificially generated. These machine learning systems can serve as a first-pass editorial control that can verify news items against additional sources, automatically provide verification from third-party sources, and further help reinforce real news stories or debunk falsities.”⁷ AI content aggregators can assign scores to inbound news stories or comments sections on news stories to rate the likelihood that the content is true and filter obviously false news. Not only can these systems identify fake news, but their accuracy in identifying false news and information will improve with use.

Content Tailoring

Content tailoring with AI is already common in media and news broadcasting. Netflix and Amazon Prime Video make recommendations based on user viewing habits, and the artificial

⁵ Vincent, J. (2019, 5 28). *Hollywood is Quietly Using AI to Help Decide which Movies to Make*. Retrieved from The Verge: <https://www.theverge.com/2019/5/28/18637135/hollywood-ai-film-decision-script-analysis-data-machine-learning>

⁶ Mitchel *et al.* (2019) *Many American Say Made-Up News is a Critical Problem that Needs to be Fixed*. Retrieved from Journalism.org: <https://www.journalism.org/2019/06/05/many-americans-say-made-up-news-is-a-critical-problem-that-needs-to-be-fixed/>

⁷ Schmelzer, R. (2019, August 23). *AI Making Waves In News And Journalism*. Retrieved from Forbes: Schmelzer, <https://www.forbes.com/sites/cognitiveworld/2019/08/23/ai-making-waves-in-news-and-journalism/#1a2ec1787748>

intelligence learns which recommendations were successful or not based on user behavior. Similarly, Facebook tailors ads based on user habits. This same AI technology is being used in media and news broadcasting. Sports highlights, weather reports, financial reports, news stories, and other content may be offered to specific consumers or users based on their history and preferences.

In addition to showing users material based on individual interests, content tailoring can also be part of content creation. Media content that appeals to people in different areas of the country or even in different countries may be more understandable if the word choices are tailored to their specific region. A single article can be written and then tailored to fit readers based on their location.

Consumer Communications

AI can also be used for customer service and providing consumers information. Chatbots can answer general user questions 24/7 in natural language, freeing customer service professionals to handle more difficult or user specific questions. In addition to customer service applications, Chatbots can be used to serve content. In 2016, *The Guardian* introduced its Chatbot via Facebook. Users can choose U.S., UK, or Australian version of Guardian News as well as the types of news that interest them, and articles will be delivered to them via Facebook Messenger.

Conclusion: The Future of AI in Media and News Broadcasting

Artificial intelligence is a growing field, but its value to media and news broadcasting is already established. AI can make news reporting faster, reduce research time, improve the quality of data, prevent the spread of fake news, boost consumer engagement, and help choose appropriate and successful projects. And AI's impact on the industry will continue to grow as machine learning and natural language generation technology improves. AI will improve the quality and speed of video editing. Visual and voice search will become more widespread and accurate. Fact checking abilities will improve and will be an invaluable tool for regaining consumer trust in the news. Over time, content created by AI will be more sophisticated and capable of creating more nuanced and in-depth material. With this technological growth, AI will become even more valuable to the industry and consumers.

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