THE ORIGIN, EVOLUTION, AND ADVANCEMENT OF ROBOT JOURNALISM

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Annotation: This paper explores the emergence and evolution of robot journalism, a technological advancement that utilizes artificial intelligence and automated software to generate and distribute news content. The study outlines the integration of data analysis, natural language generation (NLG), and algorithmic logic in modern journalism, highlighting pioneering projects such as *StatsMonkey*, *Quill*, *Wordsmith*, and *Heliograf*. Companies like Narrative Science, Automated Insights, and Tencent are presented as major innovators in this field. The research emphasizes the supportive role of automated journalism in enhancing newsroom productivity, accelerating information delivery, and maintaining content accuracy. While automation can efficiently handle routine news reporting, the paper underscores that human creativity, ethical judgment, and analytical thinking remain essential components of professional journalism.

Keywords: robot journalism, artificial intelligence, automated news generation, Narrative Science, Wordsmith, Heliograf, Dreamwriter, natural language generation, media technology, data-driven journalism, AI in journalism

Robot journalism is a type of service that involves the creation and dissemination of news content through artificial intelligence and automated software. This innovative technology allows for the rapid analysis of large volumes of data and the generation of logical conclusions from them.

"...we describe computational journalism as a tool that supplements the accountability function of journalism by combining algorithms, data, and knowledge from the social sciences."
— [Hamilton & Turner, 2009][1]

By this, the authors imply that computational journalism is a synthesis of algorithms, big data, and social science knowledge aimed at enhancing journalism's crucial role in holding power to account. With the help of technology, journalists can examine complex issues more deeply and deliver accurate and reliable information based on facts.

In 2010, the U.S.-based company *Narrative Science* marked a new phase in the development of automated journalism. One of its initial projects was a program called *StatsMonkey*, which could analyze baseball game statistics and automatically generate articles.

StatsMonkey was developed in collaboration with the Medill School of Journalism under the leadership of Professors Kristian Hammond and Larry Birnbaum. [2]The program was designed to write sports news stories without human intervention.

Based on this early initiative, *Quill*—a more advanced system—was later developed. *Quill* enabled the automatic generation of business and sports news articles. It produced content for outlets such as *Forbes* in business journalism and *Fox* in sports journalism, pioneering automated text generation technology.

Through these developments, *Narrative Science* made significant contributions to the advancement of AI-powered automated journalism.

In September 2011, *StatSheet* officially rebranded as *Automated Insights*.[3] This rebranding signified a major step toward expanding beyond sports statistics to create automated content in other domains as well.

Initially a platform for generating sports-related articles, the company later developed advanced technologies capable of producing content in fields such as marketing, financial reporting, e-commerce, and many others.

The company's flagship product is *Wordsmith*, a system based on Natural Language Generation (NLG) technology. *Wordsmith* transforms numerical and structured data into natural, human-like language automatically. This helps journalists, analysts, and organizations save significant time and resources.

For instance, the *Associated Press* uses *Wordsmith* to automatically write thousands of financial reports each quarter.

By 2013, *Automated Insights* had generated over 300 million automated texts. This number reached 1 billion in 2014 and exceeded 1.5 billion by 2016.[4] The company thus became a leading force in AI-based content generation.

Clients of *Automated Insights* include major corporations such as *Yahoo*, *Associated Press*, *Tableau*, *Comcast*, *Allstate*, *Edmunds*, and others. Using the *Wordsmith* platform, these clients generate professional, error-free content from their data sources.

Wordsmith is integrated with various software tools and platforms, including Amazon Alexa, Tableau, Zapier, Microsoft Excel, Google Sheets, and others.[5]

The transition from *StatSheet* to *Automated Insights* was a turning point in the company's history. It allowed them to evolve from a sports-focused platform into one of the world's most active and innovative companies in generating automated texts in business, finance, insurance, marketing, and more.

On March 17, 2014, the first report about an earthquake in California was published by the *Los Angeles Times*. Remarkably, this article was not written by a human journalist, but by a special AI-based algorithm. The system was developed by Ken Schwencke, a journalist and programmer at the newspaper. Once the algorithm detected the earthquake, it generated a news article within three minutes and published it on the newspaper's official website.[6]

The algorithm relied on initial data provided by the United States Geological Survey (USGS), placing the information into pre-written templates and delivering rapid updates without human involvement.

The *Los Angeles Times* also uses this algorithm for crime reports. These automatically generated articles are later reviewed and, if necessary, expanded into more comprehensive reports by human editors.

According to Schwencke, these systems are not designed to replace human journalists entirely. Rather, they perform tasks such as collecting data, generating initial drafts, and delivering timely information. These technologies ease the workload of journalists, allowing them to focus on more analytical and creative tasks.

These examples clearly demonstrate how robot journalism technologies function in today's information environment. Automated systems provide the opportunity to deliver news rapidly and reliably, often without human intervention and within very short timeframes.

Therefore, the use of artificial intelligence not only facilitates journalists' work but also optimizes editorial operations and improves the speed and quality of information flow. This, in turn, enhances the efficiency and societal relevance of modern journalism.

A significant development in this field came in 2016 with *The Washington Post*'s introduction of *Heliograf*, an AI-powered system capable of producing news articles automatically. Its main objective was to improve newsroom productivity by freeing journalists from repetitive tasks.[7]

According to Jeremy Gilbert, Director of Strategic Initiatives at *The Washington Post*, "Heliograf automatically identifies relevant data, combines it with pre-written phrases from templates, and generates versions of the article to be published across various platforms" (Gilbert, 2016).

Additionally, *Heliograf* helps expand audience engagement. Traditional journalism often creates a limited number of labor-intensive articles for a broad audience, but *Heliograf* can produce thousands of automated articles tailored to niche or local audiences (Keohane, 2017). This is especially useful for covering local events, sports statistics, or minor economic indicators.[8]

Another noteworthy example is *Dreamwriter*, an algorithm developed by Chinese tech giant Tencent. Launched in 2015, this system can process large amounts of data, identify necessary information quickly, and generate 1000-word news articles in just one minute.

The main goal of *Dreamwriter* is not to replace human journalists entirely, but to assist them by automating simple, standard articles, thereby allowing them to focus on more complex and creative topics. [9]

One of the most notable trials of this technology was during the 2016 Rio Olympics. Within just 15 days, *Dreamwriter* produced 450 news articles, most of which reported on Chinese athletes' performances. These articles were published just minutes after the events concluded.[10]

Moreover, Tencent is integrating this technology not only in news production but also into interactive entertainment products such as video games. In some games, algorithms like *Dreamwriter* can generate real-time text responses based on user actions, enhancing personalization and immersion.

Robot journalism represents a new stage in the automation of journalism. With the help of AI technologies, it simplifies and accelerates the news creation process. However, human creativity, journalistic ethics, and critical thinking remain essential components of journalism.

Therefore, robot journalism is not seen as a replacement for human journalists, but as a supportive tool that enhances their work.

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