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Exploring AI media. *Definitions, conceptual model, research agenda*

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ABSTRACT

Given the rising interest in AI-generated and synthetic media, the goal is to synthesise trending topics on how AI technology and media operation converge. A review of 2727 records from 13 international academic/non-academic databases is analysed through topic modelling and data scanning for exploratory analysis. The interpretation of the results allows a proposal of the "AI media" concept framing social-news-artificial-fake-service media phenomena leading to an extended or AI mediatisation. This study identifies fundamental challenges including trust and ethics, privacy safeguards, and the sustainability of AI ecosystems. The proposed conceptual model, definitions, and research agenda contribute to a comprehensive understanding of this emerging field. The study supports academic inquiry and policymaking with precise terminology and a forward-looking view that also considers the hype around generative AI.

Introduction

The trend towards a changing media operation (Kosterich & Ziek, 2020) due to the emergence of artificial intelligence (AI) applications has been evidenced (Chan-Olmsted, 2019; Dragt, 2018) by five prominent signals. The first major AI-related media event was the Cambridge Analytica scandal, which gained widespread attention and highlighted the impact of misused technology in media operations (Kirchengast, 2020). Second, the mainstream media has brought attention to AI-powered media production, as exemplified by the provocative robot-written article in The Guardian (2020) and the well-known Netflix recommendation systems (Pajkovic, 2021). Third, popular science fiction and documentary media have also reflected these changes, such as in the case of "The Social Dilemma" (Orlowski, 2020) and "Black Mirror" (2011–2019). Fourth, a significantly increased interest in AI has been revealed in the social sciences and humanities over the last decade where media topics have had the most prominent role in research (Feher & Katona 2021). The interest has been particularly in communicative AI technologies (Guzman & Lewis, 2020), synthetic media (Feher 2020), and AI-generated content or generative AI (Fui-Hoon Nah et al., 2023; Pataranutaporn et al., 2021), especially in cases

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where human-generated and artificial communication are no longer quite distinguishable. The fifth signal is a comprehensive summary by Chan-Olmsted, outlining AI-related media applications with automation, optimisation, or efficiency of content and message (2019). Accordingly, AI-related media advances have become widely recognised (Feher et al. 2024; Blosch & Fenn, 2021; Mir, 2023), leading to new concepts like "AI-generated media" (Pataranutaporn et al., 2021), "AI-driven media" (Sundar, 2020) or "generative AI" in the content industry (Gupta et al., 2024).

The fundamental goal of this paper is to map the converging fields of AI technology and media operation, proposing a conceptual framework. Considering this goal, the research employed both quantitative and qualitative data analysis on a global data set retrieved from 13 academic and non-academic international databases with 2727 records. The research process involved four steps. First, the trendline of academic and non-academic subcorpora was created. Second, the statistical programming language was utilised for topic modelling to identify 75 trending topics. Third, a collective terminology was identified by conducting a text-based search and manual scan to find the meanings and contexts in the initial data corpus. Finally, the trending topics and their terminology were grouped into the present and future time dimensions. The exploratory research suggests that data- and algorithm-driven technology drive the media operation, producing, distributing, moderating, and analysing news, social media, and fake media, causing a number of human-social consequences.

Investigating the convergence between media operation and AI technology is fundamental for three reasons currently. First, the summary and interpretation of the trending topics support a common technical language and jargon for academic research and industrial applications, helping accuracy and efficiency in collaborations. Second, the conceptual model and definition alternatives facilitate long-term thinking about the converging field (Adler-Kassner & Wardle, 2015; Booth et al., 2003). Third, the available data allows for mapping a common discussion platform about both trending and less-represented topics, drawing a research agenda. Hence, the goal was to integrate scholarly and practical discourse within a unified concept, also highlighting the missing discussions.

Theoretical considerations

AI-related media and human-machine communication are emerging, giving rise to diverse subjects with a pervasive role in social science and humanities (Feher & Katona 2021). This result assumes an intensifying convergence between technology and media, and also, an extension of AI media in society, culture and economy. The complexity of the field is well-represented by the staff of Facebook AI or Google AI, who are concurrently philosophers, linguists, anthropologists, data scientists or application developers according to LinkedIn data. Although media technology has already been a specific academic and professional field, thus it is extending to other domains, resulting in so-called AI mediatisation (Feher 2022). To summarise this trend, it is necessary to identify two umbrella terms.

In this context, both "media" and "artificial intelligence" serve as umbrella terms as they encapsulate fundamental meanings and a diverse array of fields (https://dictionary.cambridge.org). However, no singular concept or generally accepted definition

exists for their convergence. Therefore, considering the existing literature, it is essential to first frame the foundational meanings of media and AI. Based on this, the operation of convergence can be identified: how the media operation converges with AI and vice versa. This approach prepares topic modelling for a concept of AI media.

First the term "media" means the operation of technologies and institutions to transmit information, entertainment, and messages to reach audiences (Chandler & Munday, 2011). Previously, the term "old media" was defined as a mass communication technology (McQuail, 2000) for social interactions (Gerbner, 1967). With digital transformation, the term "new media" was proposed to identify online networks and digital platforms (Plantin et al., 2018; Rice & Katz, 2008) producing web or social media (Vukanovic, 2011) also by the digital transformation of mass media (Malmelin & Virta, 2016). However, the approaches of "new", 'future' or "after" media (Bennett et al., 2011) have recently been criticised by academic and professional experts as an obsolete name since digital services are omnipresent with their social-cultural-economic functions (Mendez et al., 2019). Moreover, contemporary media are evidently part of an emerging AI ecosystem with platformization, data-/algorithm-driven automation, machine/deep learning, personalisation or social bots (Hepp, 2020a; Mansell & Steinmueller, 2020; Sharma et al., 2021; Van Dijck, 2021). Media operation converges to AI technology this way. Therefore, the concept of AI media can characterise a new era in the evolution of media, where AI is not just a tool but a fundamental component of media operations. This convergence of AI with media allows a more effective media operation from accessibility to adaptivity and responsibility.

Second, AI drive, generate and power different operations (Kreps et al., 2022) referring to a branch of computer technologies that simulate human intelligence with the autonomy operations (Bartneck et al., 2021). This operation fundamentally works by machine learning – or in a media context, by communicative agents and social bots (Broussard et al., 2019). In this process, automation, personalisation, recommendation systems, content creation, media targeting and analysis are supported by machine learning, natural language processing, computer vision, speech recognition, generative models and reinforcement learning (Andrejevic, 2019; Danry et al., 2022; Dong et al., 2021; Huang & Rust, 2021; Maijanen et al., 2021; Rheault & Musulan, 2021). Thus, media operation is no longer simply "digital", but is generated, driven, powered or distributed by data-/algorithm-driven AI services. From this viewpoint, contemporary media operations are beginning to be recognised as an integral component of the AI ecosystem (Feher 2020; Feher et al. 2024). This convergence of media to media results in a symbiotic relationship between technological innovation and content creation, distribution, and consumption.

Considering this mutual convergence between AI and media, introducing the concept of "AI media" is proposed, which covers media operations driven by AI. This proposal allows to explore and test what topics or terminology describe this field and how this concept can be defined. Before this mapping can begin, it is essential to mention two noticeable and already existing research projects are available: 1) the AI4Media project funded under the European Union's Horizon 2020 research and innovation programme; 2) AI, Media & Democracy Lab awarded by The Dutch AI Coalition. However, these projects address specific topics ranging from democracy to neural

networks and their local-regional backgrounds determine their goals. Thus, a comprehensive and global summary of AI media operations is unavailable.

The concept of mediatisation (Couldry, 2008; Hjarvard, 2013; Jansson, 2015) or deep mediatisation (Hepp, 2020b) allows a more holistic approach via datafication and sensorized-interactive media technology (Feher 2020). However, only a few well-designed research represent this concept via investigation of news media bias, automated communication or data science for digital journalism (D'Alonzo et al., 2022; Fernandes et al., 2023; Hepp, 2020a). These approaches are still sporadic for a comprehensive summary. Especially if AI investors and decision-makers have strong concerns about the AI-related media impacts (Feher & Veres 2022). The speed of technological change does not provide enough opportunities to reflect the consequences even if there are already numerous examples of abuses and biases (Kerr et al., 2020; Tomasev et al., 2020) from fake news to political bias (Van der Linden et al., 2020). However, the effort is to encourage AI developments for social good also in media operations (Broussard et al., 2019; Tomasev et al., 2020).

Accordingly, a research agenda by Guzman and Lewis (2020) presents the most relevant theoretical background as they discuss the role of advanced technology that mediates human interaction. They summarise the critical role of AI in human-machine communication, considering the ethical aspects of automated media, from required transparency to responsibility (Lewis et al., 2019; Montal & Reich, 2017). This approach is consistent with the work of Mansell and Steinmueller (2020), highlighting the challenges of coded biases and uncertainties and suggesting policy or regulation react directly (Yadlin-Segal & Oppenheim, 2021).

Considering all these, the importance of proposing an exploratory concept that captures the convergence of media and AI is evident. To this end, Trending topics and globally available terminology will be explored first. Such an approach not only aids in identifying and mapping the current phenomena but also allows for insights into anticipated future trends. The primary objective is to develop a conceptual model of AI media to enhance academic debates, inform business strategies, and guide public policy by illustrating how leading topics are interconnected.

Methods and research questions

Goal and research questions

The fundamental goal of this paper is to synthesise and interpret trending topics in the field of AI media. Applying the results, the study also intends to formulate an explorative concept.

In this light, the following research questions were formulated:

RQ1. What are the trending topics of AI media?

RQ2. What are the terminology and future perspectives of AI media?

RQ3. How does a conceptual model represent AI media with definition alternatives?

This paper aims to answer these questions in two steps. First, an academic and non-academic data corpus allows for revealing the trending topics (RQ1). This quantitative analysis precedes and paves the way for manual data scanning, which helps produce a terminology synthesis, definition alternatives and a conceptual model (RQ2, RQ3).

Research design

Before building a research design, how artificial intelligence became a well-known and broadly used technology in society, economy and culture was considered (Feher & Katona 2021; Khanzode & Sarode, 2020). Therefore, the hypothesis was that specific media-related topics might already be available in the AI context. To test the hypothesis, quantitative and qualitative methods were also included in the research design, as shown in Figure 1.

First, data collection was performed on academic databases and non-academic public sources as part of quantitative research: an adequate amount of records were identified in
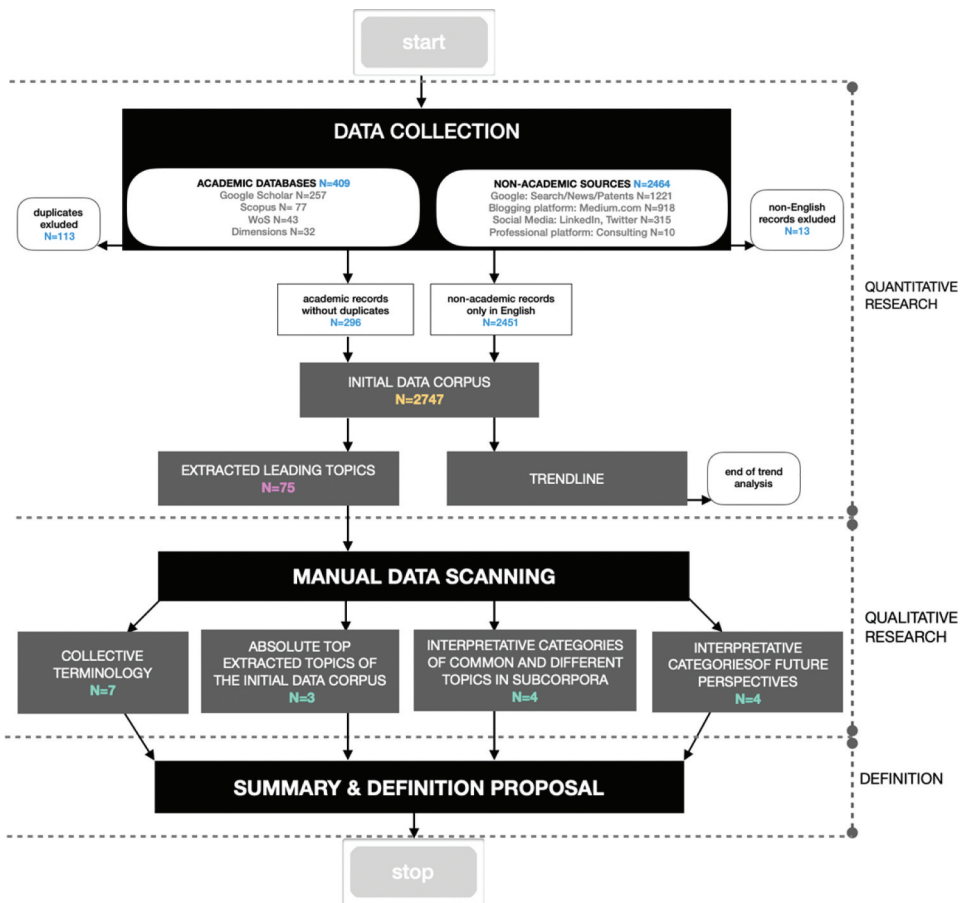

Figure 1. Research design.

databases and search engines. The time code of the records allowed for the visualisation of a trendline. The next step was to filter the automatically extracted topics to generate a response to RQ1. Details of this quantitative research are available in Section 3.2.1. Second, the extracted topics of the filtered academic and non-academic subcorpora enable us to conduct manual scanning to establish a collective terminology of AI media, answering RQ2. The results allowed the formulation of a conceptual model with definition alternatives as response RQ3. The following section describes the details of this quantitative part. The qualitative research is available in detail via Section 3.2.2.

Quantitative research

The quantitative research aimed to find trending topics in the context of AI media. To conduct this part of the research, several online sources and academic databases were tested to find related topics. After the first tests, it became evident that the past five years are relevant for the first scanning. Additionally, English language texts resulted in the highest number of sources. The data exports were completed in 2021.

Considering keyword-based search, focusing only on the word pair "artificial intelligence AND media" or the abbreviation "AI AND media" was necessary. This decision supported a simplified but well-defined research process. Even so further search keywords were also tested along with the theoretical considerations, such as "mediatisation" or "new media", as well as for related technologies from "machine learning" to "natural language processing". However, the number and quality of the records did not support this research direction as sporadic or numerous non-relevant records were produced. Thus, the extended keyword searches were ignored.

The next step was to select the most relevant databases and search engines. Google is number one in global internet use and daily page view per visitor according to Alexa.com. Therefore, it was decided to start with Google services, and the first was Google Search. It was evidence of how Google Search presents varying types and qualities of results. However, a search by Google produces a high number of search hits on an emerging topic, and the hits can be rigorously filtered with appropriate operators in the scope of the search process (Globocnik, 2020). An extra operator was available only in Google Search: it helped find extended terms of the abbreviated "AI", through the use of the operator "ai about(2) media". This search criterion allowed for finding adjectives for added meaning, for example, "AI-driven" or "AI-based" technology, in an attempt to produce a collective terminology. In the scope of an advanced search, how a region change affects Google Search was tested. In most cases, only different orders of hits were found, thus "US region" was kept as a default setting. Further Google services were also tested. Google News and Google Patents presented several relevant results as well. Thus, these were also used in the scope of this research. After the first Google tests, it was critical to search keywords only in the title of the records to find accurately relevant records (see the operators in Table 1). This way the Google-based search resulted in 1221 hits.

If the search hits revealed specific but relevant external platforms for further search, such platforms were also filtered, which resulted in 1243 results. These were social media and blogging platforms or websites, such as Medium.com (918), LinkedIn and Twitter (315), and websites of consulting companies such as Deloitte, PWC, Ernst and Young (10). In these cases, duplication filtering was completed via Google or through the search engines of the platforms. Although the search words were English, the "ai media" key pair

Table 1. Search operators and available textual data types as search engines and platforms.

Search engines and platforms	Operators	Type of textual data
Google Search	intitle: "ai media"	title and metadescription
Google News	allintitle: "artificial intelligence" AND media	
	intitle: ai about(2) media	
Google Patent	TI = "ai media"	title and headline
	TI = (Artificial intelligence AND media)	
Medium	"ai media"	title and headline
	"artificial intelligence" AND media	
LinkedIn, Twitter, Consulting	#ai media	post, twitt, title and
	#artificialintelligence AND #media	headline
Scopus, WoS, Dimensions, Google Scholar	"ai media"' OR "artificial intelligence" AND media	title and abstract

resulted in non-English hits without any relevant meaning. These 13 records were filtered manually after the exports.

Finally, 2451 records resulted in a subcorpus of non-academic sources via the selected Google services, social media and professional content. The operators of the whole process and the resulting types of text-based records are available in Table 1.

To be a comparative analysis, academic databases were also tested. Although the relevant studies are less available as mentioned above, academic research assumes more rigour and relevant results (Panda & Gupta, 2014) and validates the importance of a scientific overview. The comparison allows the understanding of the most common and significant concepts and how the focus splits along different interests.

Scopus, Web of Science, Dimensions and Google Scholar (via Publish and Perish) supported exports from databases (Martin-Martin et al., 2021). In a few cases, the word pair of "ai media" resulted in non-relevant records from radiology to microbiology. In that case, such hits were filtered in the search engines of academic databases and 409 hits remained relevant. In most cases, Google Scholar had the same records as the other database, but all other possible duplication combinations occurred in 113 cases. These duplications were excluded, which then finally resulted in 296 academic records. There was no need for language screening since the records came from titles and abstracts of the already identified English-language sources even if the full publications were in another language. The keyword search operators in academic databases are also available in Table 1. There was no applied classical scientometrics as non-academic databases were also part of the initial data corpus and analysis.

The initial data corpus was built this way and included 2747 academic and non-academic records. The majority of the records come from the non-academic subcorpus with 2451 hits and roughly ten percent of them come from the academic subcorpus with 296 hits. Already in the very first stage, these numbers and their ratio suggest a trending topic and produce sufficient data to interpret the field of AI media.

The following purpose was to apply automated analysis and topic modelling (Chuang et al., 2012) on "media" and "AI" for finding extracted topics by R (Version 1 April 1717 for MacOS), the well-known and powerful statistical programming language for data cleaning and visualisation (Austin et al., 2021; Shi et al., 2019). As the types of sources are diverse (see Table 1), only word clouds accurately support a visual summary of the extracted topics using statistical programming (He et al., 2019). The fundamental pre-process was to remove special

characters and tokenisation was used to make machine-readable components for quantitative research. The "TM" library was used to remove all punctuation marks, numbers and stopwords. Additionally, this package supported converting all the letters to lowercase. Further stopwords were manually added to the script, such as typical keywords of an academic abstract (among others "paper" or "method"), business-related verbs (among others "launched" or "announced"), names (such as Sebastian or Silvia) and obviously, the search keywords (such as "AI", "AI media" and "artificial intelligence"). Package "SnowballC" library was used to remove whitespaces.

The data extraction process was automated using the package "wordcloud" (Fellows et al., 2018). The maximum number of words was tested to reveal the frequency of occurrence and create the word clouds. The most common and relevant keywords occurred a minimum average of 15 times in academic and non-academic keyword lists and their merged keyword list in the automated process. The minimum average of 15 frequency resulted in 75 trending topics in all three word clouds with informative data visualisation. Manually reviewing this result, a smaller and larger average number did not yield less sporadic or more meaningful results in all corpora for interpretation. The top 10 extracted topics of the initial data corpus and each subcorpora were visualised through colouring to highlight the key findings. The next step was supported by manual data scanning to understand the meaning behind the keywords and to find their interpretative categories.

Qualitative research for proposing conceptual model and definition alternatives

The goal of the qualitative part of the research was to identify the collective terminology and the interpretative categories of the results through the application of manual scanning. The extracted topics of the initial data corpus computed by R supported this process (Paul & Barari, 2022) in four steps as follows:

(1) A total of 10 leading extracted topics of each word cloud were selected, which was composed of the absolute top three common and further seven different topics in each academic and non-academic subcorpus. All these were manually scanned in the initial data corpus for detailed meanings. The leading topics are evaluated using the records with the highest interest.

(2) The terms of AI-related media were filtered manually and through text-based search ("AI-" "*media" and "media*"). This process allows for finding adjectives after the abbreviation of "artificial intelligence" or word pairs including "media".

(3) The 75 extracted topics in each word cloud and their merged results allow for conducting a comparative analysis of academic and non-academic subcorpora. 32 extracted topics are common and 59 are different as far as the comparison of each subcorpus is concerned. The manual scanning of the extracted topics supports an understanding of the meanings of such topics and allows for grouping the topics into interpretative categories.

(4) "Future", "forecast", "innovation" and "change" as elements of the extracted topics supported the identification of the topics of future perspectives in the initial data corpus.

Although manual scanning is labour-intensive, all results were concurrently reviewed. Therefore, the point was to reveal trending domains with their meanings and contexts, as well as relevant future signals, with significant indicators of changes (Kaivo-Oja et al., 2020; Lee & Park, 2018).

As comprehensive definitions were not found through testing the initial data corpus with its collective terminology, comparing definitions was not an option. Thus, the qualitative part ended with a conceptual model and definition alternatives to synthesise the findings. This process allowed for the creation of an early, abstract and also future-oriented definition of AI media for use in academic and professional discussions.

Findings

The results were interpreted in two steps. First, the initial data corpus of the academic and non-academic subcorpora allows a listing of extracted summative topics, which yields answers to RQ1. Second, the collective terminology of AI media with trending topics is interpreted with trending topics, which offers responses to RQ2. This allows to answer RQ3 with a conceptual model and definition alternatives. The process facilitates a deep understanding of AI media trends and allows for formulating proposed definitions of the AI media phenomenon.

To introduce the understanding process, a trendline describes interest in AI. Several time-coded records were retrieved from the initial data corpus broken down by year. Academic and non-academic data were distinguished to establish a more informative trendline. Since the data collection took place at the end of the first half of 2021, for the sake of obtaining comparative data, it was also necessary to project results for the entire year of 2021. Moving average as a statistical method of calculating data points supported this procedure with a series of averages from 2019 when the number of records started to increase.

The past five years under scrutiny show an intensive growth of non-academic and a noticeable increase in academic records. Regarding future trends of the next five years, several different potential trendlines were tested, such as linear, polynomial and exponential ones. The exponential trendline fits best with the existing curve and this seems to forecast intensively increasing expectations as far as AI media research and development are concerned (see Figure 2). This result is consistent with Moore's law of digital technology cited by numerous academic and professional references (among others Mack, 2011; Schaller, 1997). The law describes that annually or every two years twice as much computing power becomes available as in the previous year. Although this law is more than fifty years old and several critical considerations were formulated about it, the speed of change in technology still aptly represents this boom as a baseline assumption in the industry's strategic road map (Schaller, 1997). Thus, it confirms that the interest in AI media will probably grow exponentially over the next few years.

Trending topics

Based on the statistical programming method detailed in 3.2.1 and as an answer to RQ1, extracted topics of AI media are visualised with the help of word clouds (Figure 3).
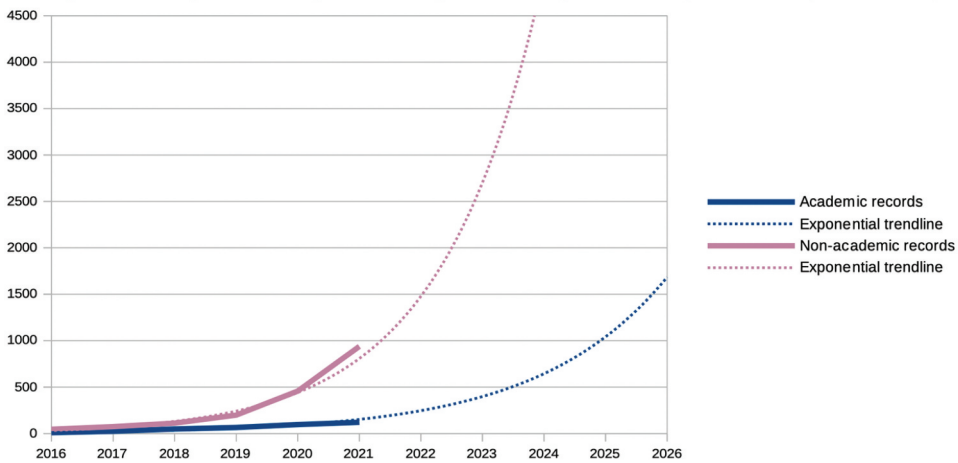
Figure 2. Trendline of academic and non-academic records, 2016–2026.

The absolute top extracted three topics of the initial data corpus are "social", "data" and "technology". Both academic and non-academic subcorpora show these common results. However, "machine" is more frequent than "technology" in the case of non-academic records highlighting human-machine interactions or machine-readable media. This reinforces the relevance of the theoretical background (Guzman & Lewis, 2020). Likewise, academic abstracts often refer to technology, but the titles of the sources mention more specific digital technologies. These results predict a social, data- and algorithm-driven digital technology supported by machine learning and generative AI – as it was also highlighted by Kreps et al. (2022), Dong et al., (2021), Huang and Rust (2021), Andrejevic (2019), Mansell and Steinmueller (2020) and Broussard et al. (2019).

The topic word with the highest number of hits is "social". Over seventy percent of "social" occurs in the word pair "social media", "social network" and "social applications" have also been identified as synonyms, even if their functional implications within these contexts can vary significantly. Apart from these meanings, only sporadic word pairs appear, such as "social enterprise," "social ads," "social listening," "social robots," or the above-mentioned docudrama entitled "Social Dilemma" as less frequent but equally relevant results. This result definitely foreshadows high expectations as far as joint social-AI media developments are concerned. In academic articles, only the term "social media machines" resonates (Newland, 2016) with social-AI media developments, but this term is not widespread. Accordingly, the terms "social-AI media" and "social media machines" are expected to become prominent unless a third relevant option appears.

"Data" and "technology" are also key topics. "technology" has a general meaning in most cases, and its contextual synonyms are "AI," "software," "computer," "cloud," "facial recognition," and "wearable technology." Accordingly, "technology" and "data" broadly describe AI and its related terms, leaving the interpretation domain open for future changes. In a few cases, "virtual reality," "communication technology," or "information technology" also occur. With these results, the operation (Kosterich & Ziek 2020)
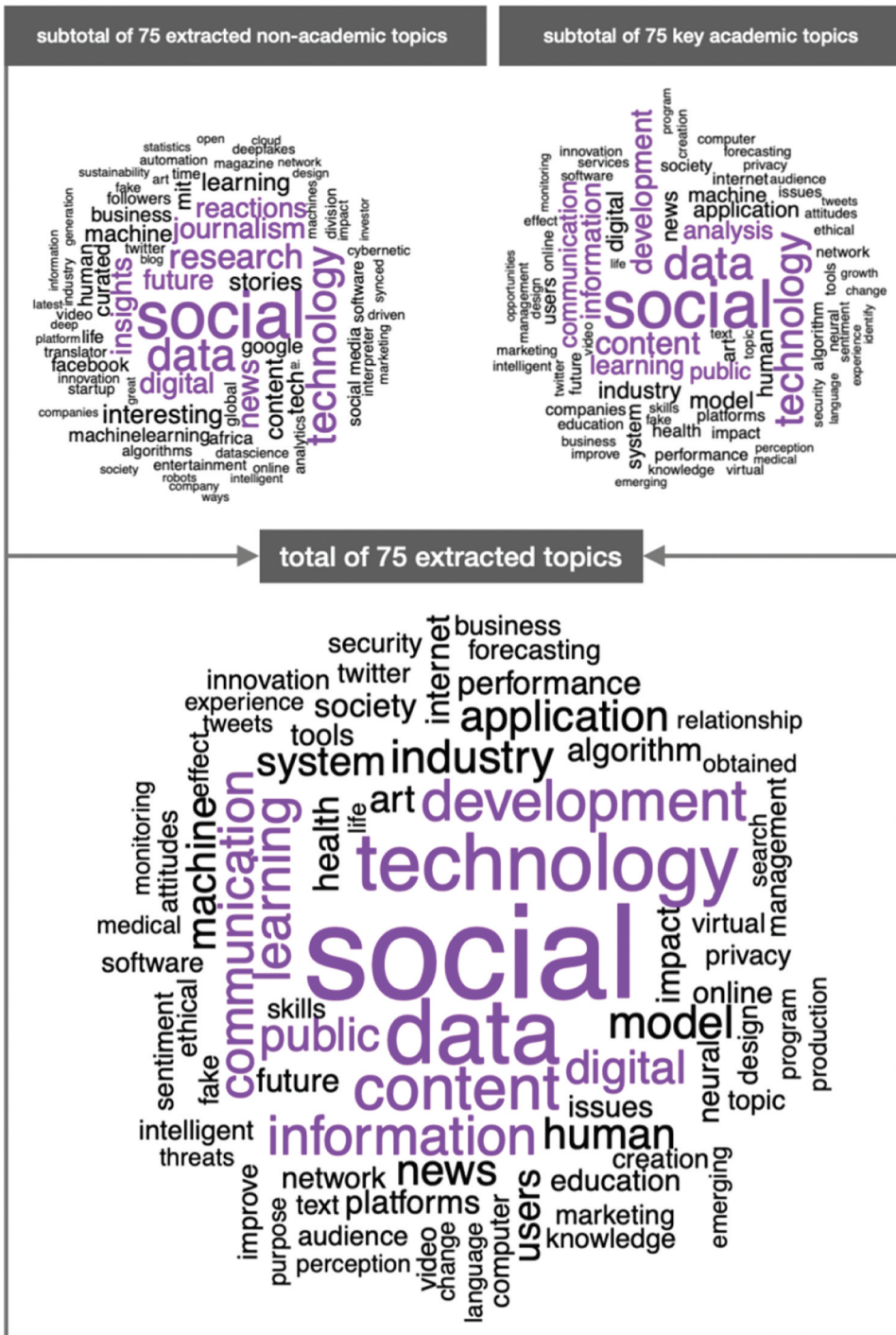
Figure 3. World cloud-based summary of extracted topics.

is more highlighted than the infrastructure (Hepp, 2020b), primarily via scientific sources with the prominent role of "Data" with "data analysis", "big data", "data science" or "behavioral data", mainly in the context of data economy or data management. However, data also constitutes a bridge between the media industry and other industries, such as the Internet of medical things (Alauddin et al., 2021) or marketing and financial technologies (Ratnakaram et al., 2021).

In the data and technology context, media are frequently defined as a service developed by AI or media-dependent services. This approach confirms the concept of mediatisation (Hepp, 2020b) if media become omnipresent in different industries through offering sensory imagination, datafication and interactive environments. This way the term "media" gains an additional meaning beyond social networks or mass media (McQuail, 2000). Current media are services that offer perceptual data and coded interactivity for society and the economy. Thus, media as a service can be interpreted as a stage in the media evolution as extended mediatisation, where the media's role and influence extend far beyond previous media roles as mass or social media.

Of the visualised top ten keywords by subcorpora, the following seven topics only partly overlap. On the one hand, the non-academic subcorpus has a strong focus on the news industry and algorithm-driven augmented journalism, in brief NewsTech (news technology). There is also a high expectation of AI media to reveal business and consumption patterns, primarily through automation, data-driven insight and predictive analysis. Regarding future perspectives, the question is how the labour market will change due to the impact of automation. On the other hand, the academic subcorpus highlights related topics: information flow, content generation and audience engagement through machine-/deep-/supervised learning by simulated neural networks and scale models. Briefly, the academic subcorpus presents a broad interest in AI media while the non-academic one is more specific regarding NewsTech and business-consumption opportunities.

The total of 75 extracted topics in the whole corpus confirms the key role of social-data-technology, highlighting intensive business investment in the AI media industry. However, policymaking and regulation are underrepresented and non-visible in the word cloud. Only data security presents surveillance safety. Additionally, AI ethics is also trending with issues of responsibilities and privacy, but only in the non-academic subcorpus. At the same time, the academic subcorpus has already presented a few publications on human biases in AI systems (Mansell & Steinmueller, 2020). To sum it up, investments in AI media are significant, while the role of regulation and policy-making are less represented, and ethics is trending primarily in the non-academic subcorpus.

In the next step, the records are filtered according to the number of citations, reactions and their highest news relevance. With the help of the applied search engines and their rankings in the databases studied, only the records, which are listed in Table 2 are comparable.

The records present three key areas of AI media. First, Reuters and Oxford University have shared a factsheet in the academic subcorpus of how AI technology and its potential are represented in the mass media. With the spread of AI, a similar representation summary of AI media can be expected to be available if more specific summaries are at the forefront, especially if the above-mentioned cases increase, such

Table 2. Records with the highest interest.

Record	Authors/ www	Title/Name	Year	Source
The most cited reference of the academic subcorpus	Brennen, J. and Nielsen, R. K.	An industry-led debate: How UK media cover artificial intelligence	2018	Reuters Institute for the Study of Journalism as part of the Oxford Martin Programme on Misinformation, Science and Media
The most relevant news in the non-academic subcorpus	Collins, B.	Facebook says a pro-Trump media outlet used artificial intelligence to create fake people and push conspiracies	2019	NBC News
The most reacted professional blog post in the non-academic subcorpus	Pandey, P.	Simplifying Sentiment Analysis using VADER in Python (on Social Media Text)	2018	Analytics Vydhia on Medium.com

as the Cambridge Analytica scandal or influential political deepfakes (Kirchengast, 2020). Second, the most relevant report, i.e. Google News, summarises a pro-Trump conspiracy website using AI-created fake photos to simulate real identities. Third, the most reacted post on medium.com is about sentiment analysis as an automated process of emotional and behavioural predictions. The second and third references about AI-generated fake media and media analysis are available in a total of 75 extracted topics in both subcorpora. Thus, automated media production, algorithm-based analytics, fake news and deepfakes are highly represented in the AI media industry.

In conclusion, our research highlights the dominance of news, social, and fake media, coupled with data and algorithm-driven media analytics, as pivotal elements within the AI media framework. This aligns with the media's extensive research in social sciences and humanities (Feher & Katona 2021). These findings also underscore the under-represented fields for investigation, from social listening to human biases in AI systems. Such elements, which lag behind the trends are particularly important for a research agenda if further mapping is to be done after the discovery phase (see Discussion).

Terminology and future perspectives

The next goal was to reveal AI media's terminology and future perspectives according to the RQ2. The method of manual data scanning of the initial data corpus was applied following this goal. The details of the process are available above in Section 3.2.2.

The manual scanning process allowed the grouping of the extracted topics with four interpretative categories: media, technology, analysis, and human-social aspects. The categories supported a comprehensive summary of collective terminology and trending topics with future perspectives (Figure 4)

As for collective terminology, AI-media, AI-generated and AI-powered media concepts describe the studied field. The meaning of AI media is not specified but a company called "AI-Media Technologies Ltd." appears frequently in the non-academic subcorpus. The company was founded in Australia in 2003 and offers live/recorded captioning, multilingual transcription and translation. Even if it is highly represented over the last
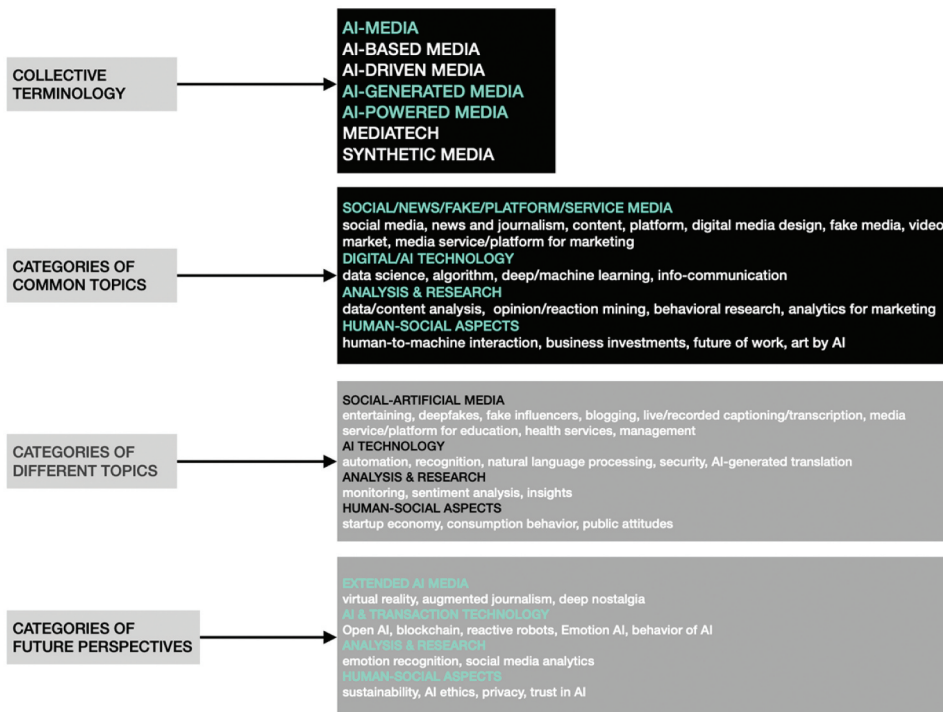
Figure 4. A comprehensive summary of trending terminology, topics and future perspectives.

two decades, the profile with specific services of text-based developments does not equal to AI media phenomena.

AI-generated and AI-powered media are also frequently used terms. The former highlights the role of machine/deep learning to produce media texts, synthetic media, or generative adversarial networks (GANs) for realistic images, videos, and voice outputs. The latter specifies social media, platform design, media planning, content distribution, fan engagement, analysis and monitoring. Therefore, AI-generated media describes the production of the relevant technology while AI-powered media represents the whole process of media operation. The terms "AI-based" and "AI-driven media" occur only a few times, "AI-based media" is part of the academic subcorpus as web-based media and "AI-driven media" is more frequent in the non-academic subcorpus in the context of personalisation.

The term "MediaTech" is an essential label in the non-academic corpus because it represents both technology and media areas such as AI-driven advertising, cross-platform integration, and facial recognition. It is expected to come up in the topics arising from the startup ecosystem, where terms like NewsTech and FinTech are prevalent.

The term "synthetic media" has the potential to become widespread. It is not only a frequent concept of AI media but also a synonym of AI-generated media, deepfakes, computer-generated images, and voice or video for product-specific human experiences. Examples of synthetic media in the non-academic subcorpora are holographic popstars, non-human influencers on Instagram, crypto celebs on Twitter or an event of the World

Economic Forum about deepfakes-risks in politics. The term "synthetic media" also highlights AI-generated media with an impact on economic value, productivity and artistic expression. These results suggest that as "synthetic media" gains traction, it could significantly reshape the media consumption landscape, influencing economic models, creative industries, and societal perceptions of authenticity and trust in digital content.

Due to theoretical considerations, "new media" was separately tested, but the term was mentioned just a few times in the academic subcorpus. This result confirms that the term "new media" is less relevant in AI context (Bennett et al., 2011; Mendez et al., 2019) if the media under scrutiny are more complex and also extended to other industries as a service. Likewise, the term "mediatization" (Hepp, 2020b, Couldry, 2008; Hjarvard, 2013; Jansson, 2015) is missing from the initial data corpus. It is therefore recommended to extend mediatisation research to AI media more intensively if the academic research wants to reflect on the changing media operation more intensively.

To summarise the discussion on collective terminology, the terms "AI media" and "AI-powered media" have the greatest potential to spread due to their general or complex meaning. The terms of AI-generated, synthetic media and MediaTech are also expected to compete.

The 32 common extracted topics were collected in interpretative categories to summarise trending topics. Regarding the media category, social-news-fake media are trending with platforms and content. Digital media design is also relevant to media services or media-dependent industries in this context. All these are supported by analytics of human behaviours and opinions. As shown by the social-economic category, human-machine interaction defines user aspects, thus business investments, the future of work and artistic reflections. These results describe a networked media landscape broadly affecting industries and disciplines.

The two subcorpora present 59 different keywords each. Scanning the meanings of these keywords, two noticeable results are available. First, essential media functions remained the same as in the case of mass media with news services and entertainment functions. However, several existing trends are emerging, such as audience-based analyses, deepfakes technology, and human-like fake or synthetic users/influencers. Second, the human-machine interactions and the analytical categories primarily represent consumer behaviour, user attitudes, sentiment analysis and insight. Several industries — primarily education, health care, and management — apply even more media as a service for effectiveness and user engagement, resulting in a strong focus on the security of automation and recognition systems. These different categories all indicate that media functions will both remain and expand into additional industries via emerging technologies. This convergence may redefine media's role across sectors, blending traditional and novel elements to reshape engagement and industry practices.

Last but not least, future perspectives reference extended or synthetic media primarily by virtual or augmented reality. Additionally, the interpretative categories of technology, open AI and the blockchain assume that users trade and share content in a trackable way without monetisation. It might be countertrends of the competitive advantage possessed by giant data companies, in short BigTech. Likewise, a strong vision is how human behaviour becomes imitated by reactive robots and how emotional AI influences the interaction between humans and machines. In this context, AI ethics, privacy and trust issues are highlighted by bias challenges, primarily in coded gender discrimination. The
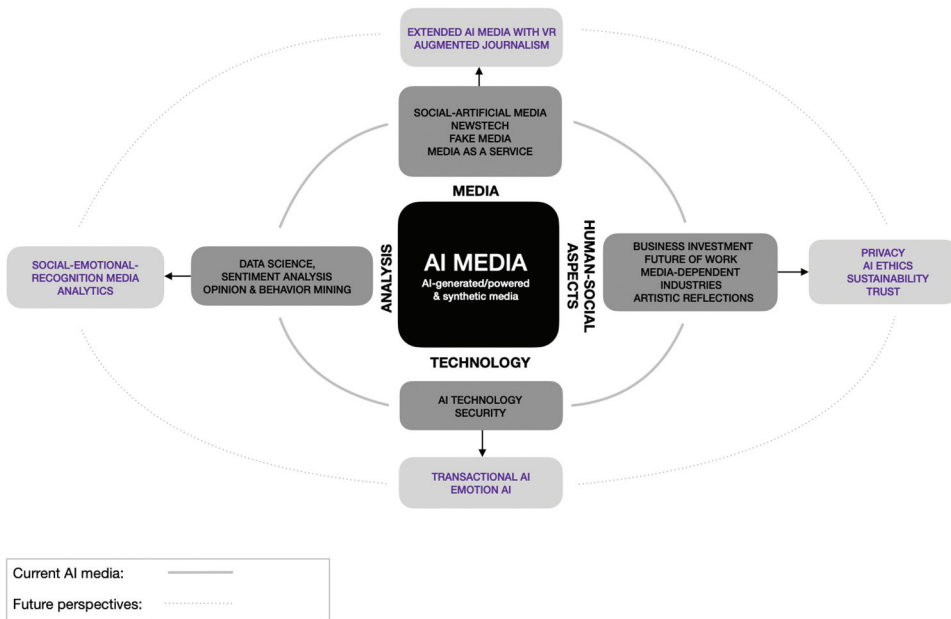
Figure 5. Conceptual model of AI media. The central and light fields summarize the current trends. The outer and darker fields present future trends.

additional challenge is the sustainability of the intensively growing algorithm-based ecosystems. These all reflect the key concerns from the theoretical background (Mansell & Steinmueller, 2020), except for sustainability.

Definition alternatives and a conceptual model

The above-presented comprehensive summary allows for creating a conceptual model and definition alternatives for AI media, answering RQ3. Based on a summary of the findings, AI media can be interpreted as AI-generated/powered and synthetic media with the above-analysed four complex categories and their topics. As shown in Figure 5, all categories are considered as current and future trends.

Given this summary, two definitions are proposed: one about recent trends and another one about the future of AI media. Both proposed definitions intentionally focus only on the critical aspects of AI media.

(1) Currently, AI media are social-artificial, synthetic, fake media or media-dependent services provided by generative-operative technologies and data-/algorithm-driven analytics for production and distribution. Its key social-human aspects are business investments, the future of work, media-dependent industries and artistic reflections.

(2) AI media are expected to be an extended AI media production and service powered by advanced analytics and recognition-behavioural-transaction technologies. The critical issues are AI ethics, trust in AI media and privacy protection. Sustainability is an additional challenge in the context of algorithm-based ecosystems.

AI media is a significant concept because the conceptual model with definition alternatives summarises the operation of technology-driven media with socio-economic challenges – from opinion mining to AI ethics. Moreover, the concept of AI media is associated with the previous concept of new media but assumes more complex, connected, and advanced technologies, causing a further extended mediatisation process.

Discussion

The paper aimed to explore the trending topics of AI technology and media operations, conceptualising the converging fields and proposing the concept of "AI media." The field lacked a cross-industry and multidisciplinary review, hence, the motivation was to support a common terminology and conceptual model for academia, business, and policymaking for a holistic understanding of this converging field.

According to the results, AI media is a relevant concept if AI technology and mass-new-social media converge and produce numerous topics and future perspectives. The exploratory concept refers to AI-generated technology and AI-powered media process with synonyms of MediaTech and synthetic media. The categories summarise the existence of AI media as social/news/fake/platform/service media via digital/AI technology and analysis/research influencing human-social aspects from business investments to the future of work. Currently, social-artificial media is primarily represented by the terminologies of startup economy or the analytics of behavioural data and user attitudes. The future perspective is an extended AI media by advanced analytics resulting in issues in sustainability, privacy, ethics and trust. These results are associated with the most theoretical considerations in digital-generative-automated services, algorithm-driven automation, machine/deep learning, natural language processing with personalisation, content creation, social bots, media targeting and analysis (Andrejevic, 2019; Bartneck et al., 2021; Broussard et al., 2019; Dong et al., 2021; Huang & Rust, 2021; Kreps et al., 2022; Maijanen et al., 2021; Mansell & Steinmueller, 2020; Mendez et al., 2019; Rheault & Musulan, 2021) from different disciplines (Feher & Katona, 2021). Moreover, the related ethical and responsibility issues have also been confirmed in line with the theoretical background by Guzman and Lewis (2020).

Although numerous fields have become accessible, a few are missing or significantly underrepresented – even if those are already available in the theoretical considerations. Surprisingly, the transmission or entertainment function of media (Chandler & Munday, 2011), conversational media with chatbots or personal assistants (Rheault & Musulan, 2021), computer vision or generative AI (Danry et al., 2022), recommendation systems (Pajkovic, 2021), autonomous operation (Bartneck et al., 2021; Bechmann & Bowker, 2019) are not or underrepresented. This may be since these technologies or applications are not accepted, widespread, or defined in the convergence of AI and media. Moreover, several further, well-known topics have the potential to be relevant in the broad context of AI media, such as macroeconomic GDP-based approaches for the media industry (Jamil, 2021), market analysis in business strategy (Tabesh, 2022), brand management in marketing (Cheng & Jiang, 2022), social inequality in internet studies (Le Bui & Noble, 2020), norms in cultural studies (Natale & Guzman, 2022), political economy and public relations (Bourne, 2019), media sociology and social-theoretical critique (Muhlhoff, 2020), creativity in art (Franceschet et al., 2021) and reward media with gaming and pornography (Suvorova, 2022).

Considering the missing topics, related policy making (Yadlin-Segal & Oppenheim, 2021) should support by an even broader topic and issue summary of how AI media trends and services are expanding along with the high- and underrepresented fields especially if deep mediatisation (Hepp, 2020) is not the only option with AI mediatisation. According to the results, extended mediatisation is also relevant if social issues are even more coded to media functions.

Extended or AI mediatisation is a suggested approach in this study as a future perspective if the missing topics of AI media will be part of the mediatisation discussion. This concept describes mass, digital, social, fake, generative and synthetic media in an integrated and interdisciplinary way. Emerging applications, such as generative AI with flagships of ChatGPT or Dall-E, are great examples of this expansion with several debates and manifestos (Gupta et al., 2024; Papacharissi, 2023). Likewise, the regulatory framework "AI Act" process evokes numerous critics, also in media governance concepts (Pierson et al., 2023).

Based on the insights from this exploratory research, we identified promising research directions in AI media for future investigation. Drawing from the key discoveries, identified gaps, and prospective directions, a research agenda is available in Table 3. These directions allow us to understand AI media's and extended mediatisation's impact on society and the economy more deeply.

In conclusion, this study contributes to research in AI media with its comprehensive summary, conceptual model, a proposal for future extended mediatisation and expected new topics to come. In line with the goal of social good, especially in media operation (Broussard et al., 2019; Tomasev et al., 2020), this study If the aim is to encourage AI developments for social good, also in media operation (Broussard et al., 2019; Tomasev et al., 2020), the AI media concept advocates a common but sufficiently broad interpretative framework for business, policy practice, and regulation.

Conclusion

The paper presented an overview of AI media terminology with future perspectives, a conceptual model and definition proposals. The focus on AI media started in 2018–2019 with exponentially growing interest in non-academic fields and slow dynamics follow this in academic research. The results suggest investigating the generative-transaction technology, the analytical methods and the human-social aspects. Considering the results of the triad of media-technology-analysis it is assumed a constant change in AI media operation with direct impact on decision making, human perception or social structures. Therefore, the article proposes a conceptualisation of AI media that can be relevant to different disciplines, industries, and policy goals.

In light of these results, we have already started to apply the suggested research agenda in specific domains. Among other research projects, we investigated the socio-economic factors of AI media adaptation via expert research to understand how AI trust can be explored (Feher et al. 2024). Our goal is that these research studies catalyse broader interdisciplinary engagement, enriching AI media discourse in academia and best practices in business and policymaking.

Table 3. Research agenda.

	Findings	Research directions
Key findings	AI plays a crucial role in transforming the media landscape across social media, news industry, and service sectors. This transformation is driven by machine learning and algorithm-driven media analytics.	– Examining AI's integration into previous media operations is fundamental to identifying optimal strategies and hurdles. – Research should focus on comparing AI media's effectiveness and assessing its socio-economic influence. – Further similar exploration is beneficial in understanding how traditional media functions coexist with new trends like deepfakes and audience analytics, impacting different industries from education to healthcare through media integration.
Missing/less represented and emerging topics	Significant gaps in media research include less explored areas, alongside underrepresented topics in social inequality, and creative arts in the media sector.	– It is advisable to understand the underlying reasons for the infrequent discussion of conversational AI, computer vision, and entertainment functions to understand their underrepresentation in the discourse. – Emerging research fields, such as audience-based analyses, deepfakes technology, and human-like fake or synthetic actors can be integrated into media and AI studies. – Fostering interdisciplinary research on AI media's socio-economic policymaking and regulation effects is suggested. – Exploring the causes of inequalities, biases, and ethical dilemmas in creative arts is equally vital.
Future-oriented approaches	Theory developments and strategy building are expected in extensive AI mediatization, urging exploration of the robust regulatory framework to harness AI's benefits for societal advancement in media.	– Prioritising the development of theories on AI's involvement in media and exploring the competitive landscape of terminologies such as Mediatech, synthetic media, AI-generated media, and generative AI is recommended. – Evaluating the effects of regulatory frameworks on media ethics and governance, primarily in applied science is fundamental. – Study of the way in which AI media can advance social good is recommended. It is expected that further explorative approaches will analyse future trends in innovative applications like generative AI in the content industry and personalised media.

Limitations of research

This paper has two limitations. First, regulative, strategic or ethical documents have not been selected for analysis. These documents are still sporadic and scarce; only a few highlight media topics. It might be an option for the following research phase if significant records are available. Second, manual scanning and interpretative categories always work with specific perspectives in the case of interpretation. These limitations, however, still allow for discussing proposed definitions of an emerging field abounding in sources.

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