

# AI Is Here To Stay: Misinformation and Human-Centric Models Between Risks and Opportunities

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## ACM Reference Format:

Marco Bellò. 2025. AI Is Here To Stay: Misinformation and Human-Centric Models Between Risks and Opportunities. 1, 1 (January 2025), 6 pages. <https://doi.org/XXXXXXX.XXXXXXX>

## 1 INTRODUCTION

Artificial intelligence has fascinated the scientific community for almost a century, spurring famous research papers such as Alan Turing's "*Computing Machinery and Intelligence*" in 1950 [34], which introduced the *imitation game*. The idea, trivialized, is that any machine capable of fooling a person into thinking it's speaking to a human can be considered sentient. For seventy-three years the game remained unbeaten, until OpenAI's ChatGPT-4 ultimately succeeded in 2023 [2]. The model, simulating AGI capabilities [5], is one of the last iterations of the Generative Pre-Training LLMs<sup>1</sup> pioneered by OpenAI in 2018 (at the moment of writing the latest available is GPT-5.2) [26], which closely followed the first breakthrough towards human-like agents: "*Attention Is All You Need*" [36] is a 2017 landmark research paper authored by eight Google researchers that introduced the *transformer* architecture, considered the backbone of all modern LLMs and the main contributor of the AI boom [19].

Computer scientists are not the only ones engrossed in the topic: philosophers involved themselves too, most notably Jhon Searle and his 1980s' *chinese room* thought experiment, which directly challenged Turing's ideas and refuted the possibility of true machine intelligence [32], and even the general public showed great interest once AIs became smart enough: ChatGPT reached one million users in just five days [21], an astonishing feat when compared to other technologies such as personal computers, which needed almost ten years to reach the same milestone [27].

Despite all of the above, the field of artificial intelligence comes with its fair share of problems and controversies: due to their inherent design, LLMs pose significant privacy risks as sensitive information is collected and used to create and fine-tune the models themselves [12], and their black-box nature makes it difficult to understand and predict their behavior [39]. Moreover, they are often trained on pirated material, like books [28] or art [20], igniting protests in many creative communities, such as hollywood writers [22] or video game actors [25]. It follows that artificial intelligence technologies should be handled carefully, without hindering their development while limiting the damages they can cause to society and individuals.

<sup>1</sup>Large Language Models (LLMs) are trained with supervised machine learning on vast amount of textual data, and are designed for natural language processing tasks, especially language generation [3, 4]

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This survey paper aims to present the current state of research on ethical and human-centric artificial intelligence, exploring how models and humans can influence each other and their environment. Section 2 showcases generation and detection of fake-news, section 3 recognition and simulation of human behaviour, as well as how to influence it. Section 4 concerns itself with biases and tendencies of the models themselves, and lastly section 5 explores ways to develop ethical LLMs that can positively impact individuals and society.

## 2 AI FOR FAKE NEWS GENERATION AND DETECTION

Fake news have rapidly become a significant concern in the digital age, thanks to their virality and potential damages. They spread faster and generate more engagement than truthful information [15, 33], and can influence public opinion, manipulate elections and pose a threat to public health. For example, the World Economic forum has identified the proliferation of false content as the leading short-term global risk in 2025 [6], and a BBC investigation found Russian-funded fake news networks aiming to disrupt european elections [17]. Moreover, fake news on health can cause psychological disorders and panic, fear, depression, and fatigue [29], making the World Health Organization call for development of international fact-checking organizations to combat this phenomenon [23].

Adding to the problem, the recent advancements in generative artificial intelligence have made it significantly easier to propagate misinformation through the web: generated content is increasingly indistinguishable from human-written text, sometimes even perceived as more credible [16], citing true evidence to support false claims [10], and inducing the illusion of majority opinion thanks to the sheer volume of information produced [8].

That being said, not all findings are entirely negative: Drolsbach and Pröllochs [9] shift their focus from potential societal consequences to real-world prevalence, conducting a large-scale analysis on the platform X. They analyzed a dataset comprising 91.452 misleading posts, both human and AI-generated, flagged through X's *Community Notes* platform<sup>2</sup>. Their findings reveal that generated fake news are often centered on entertaining content rather than controversial or political subjects, and tends to exhibit a more positive sentiment than conventional forms of misinformation. Unfortunately, it is also significantly more likely to go viral.

Lastly, AI agents can produce more than just text: they can create realistic images, videos and sounds, allowing them to make digital copies of real or fictional people, known as deepfakes. In March 2019, such a technology has been used to trick a UK-based energy firm's CEO into transferring \$243.000 to a malicious party, disguised as an entirely AI-generated executive from their parent company [11]. Deepfakes also increase the amount of conspiratorial videos on the internet, and they are especially vicious when targeting children, whose worldviews are easily swayed by deceptive, highly photorealistic content [37].

It follows that detecting and mitigating fake news is crucial. From the foundational work by Devlin et al. on *BERT* in 2018 [7], which revolutionized natural language processing through deep bidirectional transformers, to the application of said transformers in identifying automatically generated headlines [18]; the landscape of automated fake news detection has significantly expanded. Vijjali et al. [38] developed a two-stage transformer-based model for detecting COVID-19 related misinformation, combining fact-checking with textual entailment to verify claims. Their model performs significantly better than other baseline NLP approaches (table 1). Jwa et al. [14] propose an improved *exBAKE* model that leverages pre-training on a BERT model to accurately understand and assess articles' authenticity. They only analyzed the relationship between headlines body. Results can be seen in table 2. Schütz et al. [31] experimented on *FakeNewsNet* dataset with *XLNet*, *BERT*, *RoBERTa*, *DistilBERT*, and *ALBERT* and various combinations of hyperparameters. The

<sup>2</sup>Community Notes, formerly known as Birdwatch, is community-drive content moderation program on X (formerly Twitter), where contributors can add context such as fact-checks under a post, image or video. GitHub repository: <https://github.com/twitter/communitynotes>

evaluation shows that already short texts are enough to attain 85% accuracy on the test set. Using the body text and a concatenation of both reach up to 87% accuracy. Lastly, on the matter of deepfakes, Bansal et al. [1] use *Convolutional Neural Networks* (CNN) and *Deep Convolutional Generative Adversarial Networks* (GAN) to detect them with high accuracy, as shown in figure 1.

These were just a small selection of the many research works in the field of AI-aided fake news generation and detection, which while being extremely relevant and proliferous, are but a fraction of the many potential uses for these technologies.

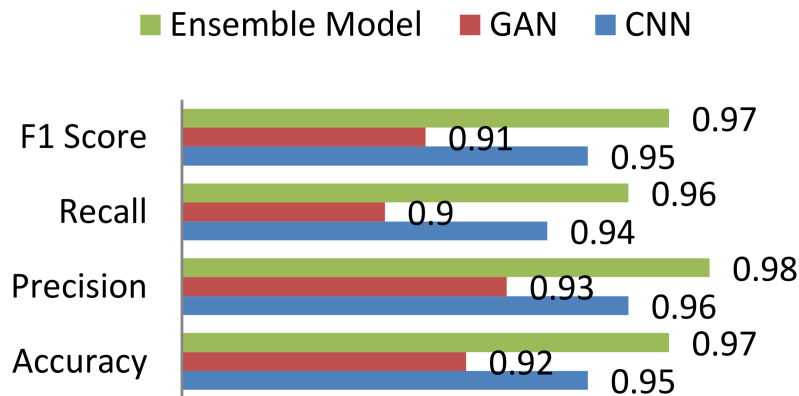


Fig. 1. Transformer models scores on deepfakes detection, Bansal et al. [1]

Table 1. Precision metrics for two-stage transformer model for COVID-19 fake news detection, Vijjali et al [38]

Models	MRR	Recall@10	Accuracy
TF-IDF	0.477	0.635	0.525
GloVe	0.182	0.410	0.579
MobileBERT	0.561	0.735	0.710
BERT	0.632	0.795	0.810
ALBERT	0.582	0.675	0.825
<b>BERT+ALBERT</b>	0.632	0.795	0.855

Table 2. Precision metrics for exBAKE transformer model on fake news recognition, Jwa et al. [14]

Models	F1	AGR	DSG	DSC	UNR
Majority vote	0.210	0.000	0.000	0.000	0.839
BERT	0.656	0.651	0.145	<b>0.839</b>	0.989
BAKE	0.734	0.667	0.463	0.822	0.986
exBAKE	<b>0.746</b>	<b>0.684</b>	<b>0.501</b>	0.813	0.988
Upper bound	0.754	0.588	0.667	0.765	0.997

### 3 AI ON HUMAN BEHAVIOUR

Today's society is already fully dependent on technology: from banking system, to traffic monitoring and public health databases IT systems have become essential. Individuals are in the same situation: virtually everyone in global north under the age of 65 possess and use daily a smartphone [13]. It follows that artificial intelligence will become an integral part of our personal and professional lives, therefore modeling them to mimic our behaviors could aid in their usefulness and understandability. There are already evidences that humans can exploit them to acquire better comprehension of a phenomenon [30], and they can also enhance creativity in heterogeneous groups [35]. Moreover, LLMs represents a significant methodological shift in computational communication science, enabling a more flexible, more nuanced, but also less controllable exploration of social theories that have historically been difficult to reduce to simple mathematical formalisms [24]. Overall, AI seems to be a good fit for understanding, modeling and replicating human behaviour.

One possible use of such capabilities is hate speech detection:

### 4 AI OWN BIASES

### 5 ETHICAL AI

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