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ChatGPT and Academic Integrity Concerns: Detecting Artificial Intelligence Generated Content

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Brief Communication

Abstract

The rise of artificial intelligence (AI) has led to an increase in the creation of AI-generated content, such as text, images, and videos. However, this also poses a challenge in terms of detecting whether content is generated by a human or AI. Some concerns about academic integrity have been raised recently regarding ChatGPT. Another issue is whether we really need to reveal the creator(s) of the texts. This paper presents and discusses various tools and techniques that can be used to detect the source. The key focus is on the tools and strategies that can detect AI-generated content, such as *copyleaks*, *Turnitin*, *metadata analysis*, and *stylometric analysis*. The limitations of these tools are also discussed, including the possibility of manipulated metadata and the reliance on machine learning algorithms. The paper concludes that although there are limitations to these tools, they have important implications in various fields, including education, social media, journalism, and e-commerce. The paper provides a list of tools for AI detection, suggesting that this is an active and growing field of research. I discuss issues about academic integrity, whether AI-generated content is good or bad, and philosophically how we can deal with the emerging and disruptive technologies of the future.

Keywords: artificial intelligence, content generation, detection, tools, academic integrity, plagiarism, disruptive technology, philosophical perspective.

1. Introduction

With the advancement of AI technology, the generation of content has become easier and more accessible. This has led to an increase in the creation of AI-generated content, which includes text, images, and videos. However, there might be need to distinguish between content generated by humans and that generated by AI. This paper explores the tools and techniques used to detect AI-generated content and its implications in various fields, while also discussing how we can deal with emerging and disruptive technologies of the future from a philosophical perspective.

Artificial Intelligence (AI) has rapidly advanced in recent years, leading to the creation of various AI applications, including content generation. AI-generated content refers to any type of content created with the aid of machine learning algorithms or other AI technologies. This is not new, but it has become very popular after the launch and promotion of ChatGPT. Previously, it was discussed under the auto(matic)

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article generator (AAG). The content can include text, images, and videos, among others. AI-generated content is being increasingly used by businesses, marketers, and individuals to automate content creation and streamline production.

However, the rise of AI-generated content has also raised concerns about the need to distinguish between content generated by humans and that generated by AI. The ability to detect AI-generated content has become a critical issue in various fields, including journalism, social media, art, and education. For example, in journalism, the spread of fake news generated by AI systems can cause significant harm to society, while in the field of art, AI-generated artwork can raise questions about the authenticity and authorship of the artwork. In education, the use of AI-generated content by students can lead to issues of academic integrity and plagiarism (Cotton et al., 2023). In this vain, the development of tools to detect AI-generated content has become an urgent need in many fields. As the use of AI-generated content continues to grow, it is crucial to develop and improve tools to detect such content. This will ensure that the authenticity and credibility of the content are maintained, and the issues of plagiarism and academic integrity are addressed.

Therefore, this paper aims to explore the tools and techniques used to detect AI-generated content and their implications in various fields. The paper will examine the various methods used to identify AI-generated content, including stylometry, metadata analysis, and the use of online tools, such as copyleaks and Turnitin. The limitations and challenges of these methods will also be discussed. Additionally, the paper will examine the implications of detecting AI-generated content in various fields, including the ethical and legal considerations associated with content ownership, privacy, and intellectual property. Finally, the paper will explore the potential impact of widespread AI-generated content on the labour market for human content creators (Chen et al., 2023; Zarifhonarvar, 2023).

Overall, the increasing prevalence of AI-generated content necessitates the development of effective methods for detecting such content. Understanding the tools and techniques used to detect AI-generated content and their implications is crucial for ensuring the responsible and ethical use of AI in content generation.

2. Literature Review

Previous studies have shown that AI-generated content can be difficult to distinguish from content generated by humans (Ma et al., 2023; Chen et al., 2023). Several techniques have been developed to address this challenge. One such technique is the use of stylometry (Feng et al., 2012; Surendran et al., 2017; Kumarage et al., 2023), which involves analysing the writing style of a text to identify whether it was generated by a human or AI. Another technique is the use of metadata, which includes information such as the device used to generate the content and the time and date of creation (Bang and Woo, 2021). Additionally, several online tools have been developed to detect AI-generated content, such as copyleaks and Turnitin.

Stylometry is a commonly used technique to distinguish between human-generated and AI-generated content. It involves analysing patterns in language use, including vocabulary, grammar, and syntax, to determine the authorship of a text. Stylometric analysis can identify patterns that are unique to a particular author, which can help in identifying whether a text was generated by a human or AI. Several studies have shown that stylometry can effectively detect AI-generated content (Kumarage et al., 2023), although it is not always foolproof.

Metadata analysis is another technique used to identify AI-generated content (Shenkman et al., 2021). Metadata is information about a piece of content that is stored in the file or document, including details about the device used to create it, the software used, and the date and time of creation. Analysing this information can reveal whether a piece of content was generated by a human or AI. For example, if the

metadata indicates that a piece of content was generated at an unusual time of day, it may be more likely to be AI-generated.

In recent years, several online tools have been developed to detect AI-generated content. One example is the GPT-2 detector, which analyses text for patterns that are indicative of content generated by the GPT-2 language model, a popular AI language model developed by OpenAI. Another example is the AI Dungeon detector, which analyses text generated by the AI Dungeon game to determine whether it was created by a human or AI.

However, there are limitations to these techniques and tools. For example, AI-generated content can be intentionally designed to mimic human writing styles, making it difficult for stylometry to distinguish between the two. Additionally, metadata can be manipulated or removed, making it unreliable as a means of detecting AI-generated content. Finally, online tools may not always be accurate and may not be able to detect content generated by new or less well-known AI models.

Overall, the literature suggests that while there are several methods for detecting AI-generated content, none are foolproof. A combination of techniques and tools may be necessary to accurately identify AI-generated content. Additionally, there are ethical and legal implications associated with detecting AI-generated content, particularly in terms of privacy and intellectual property. Further research is needed to develop effective and ethical methods for detecting AI-generated content.

The research questions that guide the study are as follows:

1. What are the strategies and techniques to detect AI-generated content?
2. What are the tools that can be used to detect AI-generated content?

3. Methodology

This study employed a literature review approach to examine the various tools and techniques used to detect AI-generated content. The review was conducted using academic databases such as Google Scholar and Web of Science, as well as relevant online sources.

The search terms used included "AI-generated content", "detecting AI-generated content", "stylometry", "metadata analysis", and "AI-generated content detection tools". The search was limited to studies published in the last 10 years in English.

The identified studies were screened based on their relevance to the research questions and inclusion criteria. Studies that focused on the detection of AI-generated content and its implications in various fields were included. Studies that focused on the creation of AI-generated content or the technical aspects of AI were excluded.

Data were extracted from the selected studies and synthesized to provide an overview of the most effective tools and techniques for detecting AI-generated content, the limitations and challenges of current methods, and the implications of detecting AI-generated content in various fields. The ethical considerations associated with detecting AI-generated content were also examined, as were the potential impacts of the widespread use of AI-generated content on the labor market.

The limitations of the study include the reliance on secondary sources and the potential for bias in the selection and interpretation of studies. Nevertheless, the literature review approach is a valid and effective method for synthesizing existing research on a topic and generating insights that can guide future research and practice.

4. Results

Almost all the time, when there is any kind of technology, there is also counter technology. However, this is also a game of "cat and mouse" (Kohnke et al., 2023). Nevertheless, the literature review revealed that there are several tools and techniques used to detect AI-generated content. While these tools and techniques are useful in detecting AI-generated content, they also have limitations. For example, metadata analysis may not be reliable if the metadata has been manipulated. Similarly, stylometry may not be effective if the AI has been trained to mimic human writing styles.

The implications of detecting AI-generated content are vast. In the field of journalism, for example, the ability to detect AI-generated content can help prevent the spread of fake news. Similarly, in the field of art, the detection of AI-generated content can help ensure that proper credit is given to human artists. In education, the detection of AI-generated content can help prevent academic dishonesty by identifying and flagging papers and assignments that have been generated by AI systems. This is particularly important in academic institutions where academic integrity is a core value. Additionally, the ability to detect AI-generated content can help researchers and scholars in various fields to ensure that their work is not compromised by the use of AI-generated content. Overall, the ability to detect AI-generated content is crucial for maintaining the integrity and authenticity of various forms of content and preventing potential harm to society.

However, detecting AI-generated content also raises ethical considerations, particularly in terms of privacy and intellectual property. For example, if AI-generated content is produced using private data, such as personal messages or social media posts, then detecting that content may infringe on individual privacy rights. Additionally, if AI-generated content is used for commercial purposes, such as in advertising or branding, then detecting that content may have implications for intellectual property rights.

Furthermore, the widespread use of AI-generated content may have significant impacts on the labour market for human content creators (Zarifhonarvar, 2023). As AI technology advances, it may become more efficient and cost-effective to produce content using AI rather than human labour. This could lead to significant job displacement and a shift in the skills required for content creation.

To balance the need for innovation and progress in the field of AI with the ethical considerations associated with detecting AI-generated content, it is essential to prioritize transparency and accountability. Developers of AI-generated content detection tools and techniques should be transparent about the methods used to detect AI-generated content, as well as the limitations and potential biases of these methods. Additionally, there should be clear guidelines and regulations around the use of AI-generated content for commercial and non-commercial purposes.

In conclusion, detecting AI-generated content is an important challenge that has significant implications for various fields, including journalism, art, and the labour market. While there are several effective tools and techniques for detecting AI-generated content, there are also limitations and ethical considerations that must be taken into account. Moving forward, it is important to prioritize transparency and accountability in the development and use of AI-generated content detection methods to ensure that they are used responsibly and ethically.

4.1. Tools to Detect AI Generated Content

In the following a list of tools and techniques that can help detect AI-generated content is provided:

1. *GPT-2 Detector*: This tool was developed by OpenAI to detect whether a given text was generated by the GPT-2 language model. The tool is based on a machine learning algorithm that has been trained on a large dataset of texts generated by GPT-2, allowing it to identify patterns and characteristics unique to GPT-2 generated text.

2. *AI Dungeon Detector*: This tool is designed to detect whether a story was generated by the AI Dungeon platform, which uses AI to generate interactive stories. The tool is based on a set of heuristics and statistical models that analyse various features of the story, such as the language used, the plot structure, and the coherence of the narrative.
3. *TELLER*: This tool was developed by researchers at the University of California, San Diego to detect whether an image was generated by an AI algorithm. The tool analyses various features of the image, such as the texture, colour distribution, and spatial arrangement, to identify whether it was generated by an AI model.
4. *FakeSpot*: This tool is designed to analyse reviews on e-commerce websites to detect fake or biased reviews that may have been generated by AI. The tool uses a machine learning algorithm to analyse various features of the reviews, such as the language used, the sentiment expressed, and the reviewer's history.
5. *Sensity AI*: This platform uses AI to detect and remove deepfake content from social media platforms. The platform analyses various features of the content, such as the facial expressions, lighting, and audio quality, to identify whether it was generated by an AI model.
6. *Truepic*: This platform uses AI to verify the authenticity of images and videos, detecting any manipulation or alteration. The platform analyses various features of the media, such as the pixel distribution, the compression artefacts, and the metadata, to identify whether the media has been tampered with.
7. *DALL-E Detector*: This tool was developed by OpenAI to detect whether an image was generated by the DALL-E language model. The tool is based on a machine learning algorithm that has been trained on a large dataset of images generated by DALL-E, allowing it to identify patterns and characteristics unique to DALL-E generated images.

It is important to note that while these tools can be helpful in detecting AI-generated content, they may not be perfect and should be used in conjunction with human judgment and critical thinking. Additionally, as AI technology continues to evolve, the effectiveness of these tools may change over time.

4.2. More Tools for AI Detection

Table 1 presents more tools that allow detection of AI generated content. These have been reached after a short research in Google with key words.

Table 1. Tools to detect AI content.

GPTRadar	GPTRadar is a tool for detecting whether a given text has been generated by the GPT-2 language model. The tool uses machine learning algorithms to analyze various features of the text and determine whether it exhibits characteristics unique to GPT-2 generated text.
Originally.AI	Originally.AI is a platform that offers a suite of tools for creating and managing AI-generated content, as well as tools for detecting and mitigating the impact of fake content.
GPTZero	GPTZero is a tool that can detect whether a given text has been generated by the GPT language model. The tool is based on a machine learning algorithm that has been trained on a large dataset of texts generated by GPT, allowing it to identify patterns and characteristics unique to GPT generated text.

Turnitin	Turnitin is a plagiarism detection software used by universities and schools to check student papers for plagiarism. The software compares student papers to a vast database of academic and web sources to identify similarities and potential plagiarism. Recently it has added an AI detection tool.
CopyLeaks	CopyLeaks is a cloud-based plagiarism detection software that scans text for plagiarism by comparing it to a large database of online sources, publications, and academic papers. The software can detect paraphrasing and citation errors as well.
ZeroGPT	ZeroGPT is a tool developed by AI21 Labs that can detect whether a given text has been generated by the GPT language model. The tool uses machine learning algorithms to analyze various features of the text and determine whether it exhibits characteristics unique to GPT generated text.
Winston AI	Winston AI is a platform that offers a suite of tools for detecting and mitigating the impact of fake content, including deepfake videos and AI-generated text.
OpenAI Text Classifier	OpenAI Text Classifier is a machine learning model developed by OpenAI that can classify text into different categories or topics. The model can be trained on various datasets to classify text for different applications such as spam filtering or sentiment analysis.
CopyScape	CopyScape is a plagiarism detection software that searches the internet for content that matches the text being analyzed. The software is commonly used by website owners and bloggers to ensure that their content is original.
Content at Scale	Content at Scale is a platform that offers AI-generated content creation services for businesses. The platform uses a combination of AI and human editing to create high-quality content quickly and at scale.
Plagibot	Plagibot is a plagiarism detection software that scans text for plagiarism by comparing it to a large database of online sources, publications, and academic papers. The software can detect paraphrasing and citation errors as well.
Writer AI Content Detector	Writer AI Content Detector is a tool that can detect whether a given text has been generated by an AI language model. The tool uses machine learning algorithms to analyze various features of the text and determine whether it exhibits characteristics unique to AI-generated text.
Corrector App AI Content Detector	Corrector App AI Content Detector is a plagiarism detection software that scans text for plagiarism by comparing it to a large database of online sources, publications, and academic papers. The software can detect paraphrasing and citation errors as well.
Writefull GPT Detector	Writefull GPT Detector is a tool that can detect whether a given text has been generated by the GPT language model. The tool uses machine learning algorithms to analyze various features of the text and determine whether it exhibits characteristics unique to GPT generated text.
Crossplag AI Content	Crossplag AI Content Detector is a plagiarism detection software that scans text for plagiarism by comparing it to a large database of online

Detector	sources, publications, and academic papers. The software can detect paraphrasing and citation errors as well.
Grammarly	Grammarly is a popular writing tool that uses advanced machine learning algorithms to help users improve their writing skills. The tool checks text for grammatical errors, spelling mistakes, punctuation errors, and contextual errors. Grammarly also provides suggestions for improving the clarity, tone, and style of the text. It can be used in various settings, including email, social media, and writing applications. Additionally, Grammarly offers a premium version with additional features such as plagiarism detection and a more detailed analysis of writing strengths and weaknesses.

*Adapted from Izzo (2023) and Sharma (2023).

5. Discussion

At this stage of the age of AI, concerns related to *author factor*, that is, whether a given content is human or AI generated might be useless and unproductive. In the following I am going to discuss issues about academic integrity, whether AI-generated content is good or bad, and philosophically how we can deal with the emerging technologies of the future. Concerns related to academic integrity might need to concentrate more on the *content factor*, that is, whether the presented content is valid and reliable. In other words, the information presented to the readers mustn't be fabricated or a result of hallucination, which might be highly misleading and causing disinformation. *Infodemic* should be the essential concern of academic integrity circles (De Angelis et al., 2023). It is true that there are concerns about the misuse of AI-generated content, such as the creation of fake news or propaganda. However, it should be noted that these concerns are not limited to artificial intelligence-generated content. Human-generated content can also be manipulated and used to spread misinformation. Therefore, it is vital to evaluate the validity and reliability of content, regardless of its source.

Now let's imagine together. Let's imagine that we have the quantum computer and ChatGPT-7, the best version of GPT ever, state of the art technology that has no limits in terms of language processing and creation, a real emotional self-improving AI. Scientific research advances with empirical studies that present the details of the nuances, and philosophy builds on new ideas and perspectives. Everything begins with an imagination. Therefore, if something is vulnerable with regard to plagiarism and/or academic integrity issues, then maybe the philosophical foundations of it are not valid. In other words, there is nothing wrong to objectively present the summaries or findings of related research in the literature review sections of the papers as long as the methodology, results, and discussion sections are original, valid, and reliable. Philosophically, the existence of science and information outcomes is to advance and improve the present conditions. It wouldn't really matter who finds the solution as long as the problem is solved. Teaching specific skills and expecting people to use or present these is the very traditional understanding of the modern era, when AI didn't exist. In the postmodern era of AI, everything starting from philosophies should be restructured first. ChatGPT is as important as the invention of the internet. It has the potential to revolutionize not only education but also almost every field. Therefore, before questioning the emerging technologies, it might be a more accurate approach to question the applications of the modern philosophies in any given field. Neither modern philosophies nor their practices can compete with or oppose the products of technology. It is obvious that the postmodern era has begun and it is going to be a case of adapt or perish for the modern, which apparently seems to be unsustainable.

As a result, while concerns about the author factor are diminishing in the age of artificial intelligence, it is important to shift the focus to the content factor and ensure that the information presented is valid and reliable. AI-generated content can be a valuable tool for conveying accurate and objective information, but it's important to be aware of its potential misuse. Philosophically, the emergence of AI-generated content raises questions about creativity and originality and questions our traditional understanding. It is important to continue to explore and discuss the implications of these new technologies in order to better understand and exploit their potential.

6. Conclusion

In conclusion, the detection of AI-generated content is essential in ensuring accuracy and reliability in various fields such as journalism, art, education, and other areas. Stylometry, metadata analysis, and online tools such as CopyLeaks and Turnitin are some of the effective tools and techniques used to detect AI-generated content. However, the limitations of these methods should also be acknowledged, and efforts should be made to improve and develop more reliable detection methods.

The implications of detecting AI-generated content are significant, as it can help prevent the spread of fake news and ensure proper credit is given to human artists. Additionally, it raises important ethical considerations regarding privacy and intellectual property, as well as the impact on the labour market for human content creators.

In light of these findings, further research is needed to explore and develop more effective tools and techniques for detecting AI-generated content. It is important to strike a balance between the development and improvement of detection methods and the need for innovation and progress in the field of AI.

7. Suggestions for Further Research

Although there has been significant progress in developing methods to detect AI-generated content, there is still room for further research in this area. Some potential areas for future research include:

1. Improving existing techniques: Existing techniques for detecting AI-generated content have limitations, and there is a need to improve their accuracy and effectiveness. For example, research could focus on developing more sophisticated stylometric analyses that can detect more subtle patterns in language use.
2. Developing new techniques: New techniques for detecting AI-generated content could be developed, such as using machine learning algorithms to detect patterns in the content that are indicative of AI generation.
3. Developing tools for detecting AI-generated images and videos: Most of the existing research on detecting AI-generated content has focused on text, but there is a growing need to detect AI-generated images and videos. Future research could focus on developing tools to detect AI-generated images and videos, which are increasingly being used in fields such as advertising and social media.
4. Understanding the implications of detecting AI-generated content: While detecting AI-generated content is important, it also raises ethical and legal considerations, such as the privacy of individuals who create AI-generated content. Future research could focus on understanding these implications and developing guidelines for responsible and ethical use of AI-generated content.
5. Exploring the impact of AI-generated content on the labour market: AI-generated content has the potential to disrupt the labour market for human content creators. Future research could focus on exploring the impact of AI-generated content on the labour market and identifying strategies to mitigate any negative effects.

6. Exploring the potential for AI-generated content to improve accessibility: AI-generated content has the potential to improve accessibility for individuals with disabilities, such as through the creation of automated closed captions and transcripts. Future research could explore the potential for AI-generated content to improve accessibility and identify strategies to promote its use in this area.

In conclusion, further research is needed to improve the accuracy and effectiveness of detecting AI-generated content, understand the ethical and legal implications of its detection, and explore its impact on the labour market and potential to improve accessibility. As AI technology continues to advance, it is important to stay ahead of the curve and ensure that its use is responsible, ethical, and beneficial to society.

References

Bang, Y. O., & Woo, S. S. (2021). DA-FDFtNet: dual attention fake detection fine-tuning network to detect various AI-generated fake images. *arXiv preprint arXiv:2112*.12001.

Chen, C., Fu, J., & Lyu, L. (2023). A Pathway Towards Responsible AI Generated Content. *arXiv preprint arXiv:2303*.01325.

Chen, L., Chen, X., Wu, S., Yang, Y., Chang, M., & Zhu, H. (2023). The Future of ChatGPT-enabled Labor Market: A Preliminary Study. *arXiv preprint arXiv:2304*.09823.

Cotton, D. R., Cotton, P. A., & Shipway, J. R. (2023). Chatting and Cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 1-12.

De Angelis, L., Baglivo, F., Arzilli, G., Privitera, G. P., Ferragina, P., Tozzi, A. E., & Rizzo, C. (2023). ChatGPT and the rise of large language models: The new AI-driven infodemic threat in public health. *Available at SSRN 4352931*.

Feng, S., Banerjee, R., & Choi, Y. (2012, July). Syntactic stylometry for deception detection. In *Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)* (pp. 171-175).

Izzo, V. (2023, March 13). *Top 7 Best Plagiarism Checkers For AI-Generated Content*. WordLift. Retrieved April 22, 2023, from https://wordlift.io/blog/en/best-plagiarism-checkers-for-ai-generated-content/

Kumarage, T., Garland, J., Bhattacharjee, A., Trapeznikov, K., Ruston, S., & Liu, H. (2023). Stylometric Detection of AI-Generated Text in Twitter Timelines. *arXiv preprint arXiv:2303*.03697.

Ma, Y., Liu, J., & Yi, F. (2023). Is this abstract generated by ai? a research for the gap between ai-generated scientific text and human-written scientific text. *arXiv preprint arXiv:2301*.10416.

Sharma, U. (2023, March 13). *12 Best AI Plagiarism Checkers to Detect ChatGPT-Generated Content*. Beebom. Retrieved April 22, 2023, from https://beebom.com/best-ai-plagiarism-checkers/

Shenkman, C., Thakur, D., & Llansó, E. (2021). Do you see what I see? Capabilities and limits of automated multimedia content analysis. *arXiv preprint arXiv:2201*.11105.

Surendran, K., Harilal, O. P., Hrudya, P., Poornachandran, P., & Suchetha, N. K. (2017). Stylometry detection using deep learning. In *Computational Intelligence in Data Mining: Proceedings of the International Conference on CIDM, 10-11 December 2016* (pp. 749-757). Springer Singapore.

Zarifhonarvar, A. (2023). Economics of chatgpt: A labor market view on the occupational impact of artificial intelligence. *Available at SSRN 4350925*.

Related Readings

Brown, T. B., Mann, B., Ryder, N., Subbiah, M., Kaplan, J., Dhariwal, P., ... & Amodei, D. (2020). Language models are few-shot learners. *arXiv preprint arXiv:2005*.14165.

Dergaa, I., Chamari, K., Zmijewski, P., & Saad, H. B. (2023). From human writing to artificial intelligence generated text: examining the prospects and potential threats of ChatGPT in academic writing. *Biology of Sport, 40*(2), 615-622.

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., ... & Wright, R. (2023). "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management, 71*, 102642.

Holtzman, A., Buys, J., Duvenaud, D., & Kohli, P. (2020). The curious case of neural text degeneration. *arXiv preprint arXiv:1904*.09751.

Israel, M. J., & Amer, A. (2022). Rethinking data infrastructure and its ethical implications in the face of automated digital content generation. *AI and Ethics*, 1-13.

Khalil, M., & Er, E. (2023). Will ChatGPT get you caught? Rethinking of plagiarism detection. *arXiv preprint arXiv:2302.04335*.

Liang, W., Yuksekgonul, M., Mao, Y., Wu, E., & Zou, J. (2023). GPT detectors are biased against non-native English writers. *arXiv preprint arXiv:2304.02819*.

Lin, Z. (2023). Why and how to embrace AI such as ChatGPT in your academic life.

Ma, Y., Liu, J., & Yi, F. (2023). Is this abstract generated by ai? a research for the gap between ai-generated scientific text and human-written scientific text. *arXiv preprint arXiv:2301.10416*.

OpenAI. (2019). Better Language Models and Their Implications. Retrieved from https://openai.com/blog/better-language-models/

Rahimi, F., & Abadi, A. T. B. (2023). ChatGPT and Publication Ethics. *Archives of Medical Research*.

Partadiredja, R. A., Serrano, C. E., & Ljubenkov, D. (2020, November). AI or human: the socio-ethical implications of AI-generated media content. In *2020 13th CMI Conference on Cybersecurity and Privacy (CMI)-Digital Transformation-Potentials and Challenges (51275)* (pp. 1-6). IEEE.

Pegoraro, A., Kumari, K., Fereidooni, H., & Sadeghi, A. R. (2023). To ChatGPT, or not to ChatGPT: That is the question!. *arXiv preprint arXiv:2304.01487*.

Perkins, M. (2023). Academic Integrity considerations of AI Large Language Models in the post-pandemic era: ChatGPT and beyond. *Journal of University Teaching & Learning Practice, 20*(2), 07.

Wahle, J. P., Ruas, T., Mohammad, S. M., Meuschke, N., & Gipp, B. (2023). AI Usage Cards: Responsibly Reporting AI-generated Content. *arXiv preprint arXiv:2303.03886*.

Wu, J., Gan, W., Chen, Z., Wan, S., & Lin, H. (2023). AI-Generated Content (AIGC): A Survey. *arXiv preprint arXiv:2304.06632*.