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The Influence and Strategies of Generative Artificial Intelligence on Academia, Ethics and Society

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Abstract

In the context of the emerging digital environment, generative artificial intelligence (GAI) is quickly becoming implemented in different spheres of life and even begins to replace people in some professions. This means that GAI is leading a new round of technological and industrial revolution. The application and growth of artificial intelligence has improved the society as well as the economy and but has issued many ethical and social problems thus making ethical governance of artificial intelligence more relevant. To contribute to the further development of the concept GAI under the conditions of sustainable development of human society and science, industries and scholars around the world have started researches on this technology. However, as GAI is still an embryonic field, more research efforts must be directed toward this field in the future. Researched articles that compare the use of GAI to the effects on ethical and societal concerns will form the basis of this paper and the resulting discussion of the pros and cons of this technology, this paper considers and demonstrates the difficulties of students, educators, and academics facing the consequences of GAI development. Finally, it has suggestion for the governance of GAI's next phase of growth.

Keywords

Generative AI, Influence, Challenges, Strategy

1. Introduction

Generative AI is an artificial intelligence that incorporates multiple techniques of machine learning in order to reconstruct features of objects from data and create new content in form of text, image and video (Gartner, 2022). Creativity by generative artificial intelligence is achieved through the use of technologies such as deep learning, natural language processing and computer vision (Wang Wenyu, 2024). It is gradually permeating into different areas of social activities with new theories, new patterns,

and new paradigms owing to the features of its efficiency, lively representation of knowledge, and a wide range of application (Deng et al. 2023). GAI is actually continuously reconstructing human and computer communications that will entail huge disruptive impacts and changes to human society. With the application of GAI to various field, this has provided several prospects to the advance of various fields, however this has introduced several issues and challenges to the current technological regulation system, social advancement and economical processes. Because the laws and regulations that regulate or relate to generative artificial intelligence are still in the process of development, questions of fairness, accountability and safety are emerging, resulting in many social problems. At present, people have realized many questions and issues generated by generative artificial intelligence and have made some research. Using VOSviewer, a keyword clustering analysis was conducted on literature related to "generative artificial intelligence" witch from 2023. The results are shown in the figure 1, where keywords such as "moral challenges, ethical issues, academic misconduct, and false information" are highlighted, indicating that these issues and challenges are receiving increasing attention from researchers.

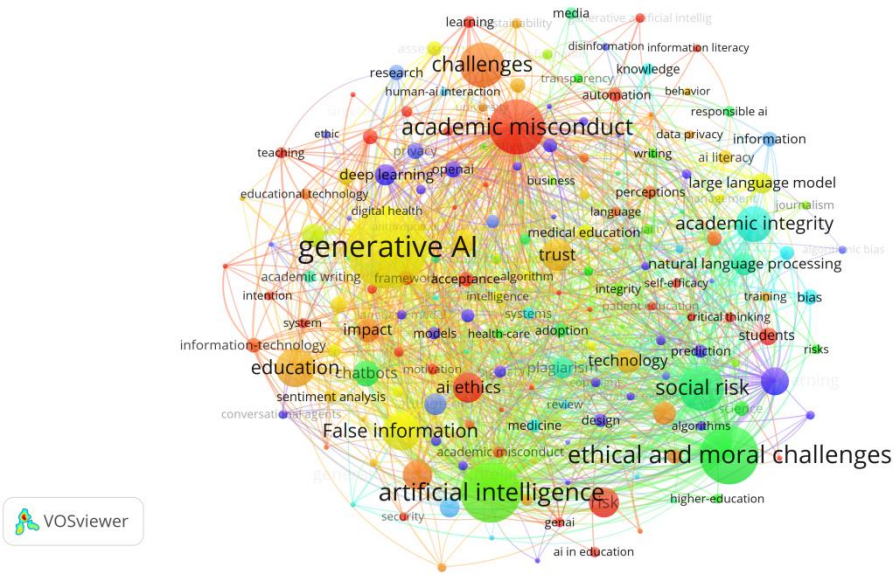

Figure 1. Keyword Clustering Analysis Map of Generative Artificial Intelligence

Based on available studies and research, it can be identified that there is a specific social risk of generative artificial intelligence: endangering state security, marginalization of digital workforce' and unclear responsibility distribution (Yuan Zeng, 2023). On the same note, it has raised such questions as integrity, academic dishonesty, and shifts in teacher tasks to the education and academia. Of course, experts have provided solutions to these problems considering technical, legal as well as third party aspects (J. Doe & A. Smith, 2020). That is why some of the countries have developed the right policy and law rules to aid and restrain them. The purpose of this article is to consider what has been discovered on generative AI, to discuss moral and social issues that it raises, and to discuss how it

affects students, teachers, and academia. It will also indicate the advantages and disadvantages of using generative AI as well as provide some positive uses for generative AI.

2. Ethical and Social Issues of Generative Artificial Intelligence

2.1 Ethical Challenges

With the widespread application of generative artificial intelligence, its challenges to social morality and ethics are becoming increasingly apparent, and the problems it brings are gradually emerging, such as misleading and abusive information, prejudice and discrimination, privacy protection, and malicious use, which are more prominent issues. The dialogues generated by artificial intelligence language models may provide users with inaccurate or misleading responses, leading to the spread of misinformation; If the algorithm and data generated by GAI are biased, it may lead to GAI's response being biased and discriminatory (Ferrara et al., 2016); Artificial intelligence big models and their pre training require the collection and processing of a large amount of user data, which inevitably involves technical and commercial confidential data as well as national security data, which may pose a threat to commercial secrets and national security; The training of GAI models requires massive amounts of data, and the collection and analysis of a large amount of personal data may violate users' privacy rights, leading to the abuse or leakage of personal information, and raising questions about the purpose and security of data use (Zhu et al., 2023). GAI may be used to create false content that is difficult to identify, and even maliciously used to influence, intervene, and manipulate social opinion and political processes (Li Yuequan, 2023). Generative artificial intelligence may be used in business to influence or manipulate user behavior and decisions. If GAI is used for improper purposes or abused to deprive others of their rights, it will have a negative impact on society. Who should be held responsible for GAI's mistakes once these prominent issues occur? Is it GAI itself or its developers or operators? This involves issues of responsibility definition and legal liability.

2.2 Social Issues

The development of GAI will produce a sequent of changes in social production relations, lifestyles, organizational structures, and operational states. During these changes, new social problems will also arise. Some scholars believe that the social risks caused by generative artificial intelligence exhibit characteristics of dispersion, distribution, penetration, and evolution (C. White, 2021). Firstly, generative artificial intelligence is based on a vast amount of information sources and outputs content through logical inference, making it difficult to ensure the accuracy of the generated results. If the generated content contains false information and spreads widely in society, it will affect people's judgment and actions; If the generated content is biased information, it can lead to information asymmetry and biased speech, making it difficult for users to distinguish the authenticity of the information. In some cases, this technology may be used to influence public opinion and even intervene in political elections (Lei Haoran, 2024). The spread of false information may cause a crisis of trust in society and lead to social unrest (Du Yanyong, 2022); In the application scenarios of generative

artificial intelligence, deep forgery technologies such as AI face swapping and AI voice swapping, if maliciously used, will infringe on the portrait and reputation rights of relevant civil subjects (Hertzman A. et al., 2022). If used by criminals, they are highly likely to become criminal tools. GAI may also be abused for online fraud and other criminal activities. Secondly, GAI will exacerbate social inequality. The data of the generative AI model comes from the Internet, which spreads quickly and easily becomes the mainstream information (Huo et al., 2024). In areas lacking data, the online content about people in this area is relatively limited, and the voice of vulnerable groups is often not heard or submerged in massive data, leading to the hidden risk of further marginalization, resulting in uneven development (Zhou et al., 2022). Finally, GAI brings new challenges to production and daily life. Due to the abuse or malicious use of GAI, it is easy for enterprises to encounter issues such as data non-compliance, copyright infringement, and trade secret leakage (Phoenicia S. et al., 2023). The use of GAI's analysis and decision-making black box, professional team training, investment budgeting, and other issues can also pose difficulties for the smooth operation of enterprises (Sun et al., 2024). GAI can also bypass traditional security measures such as email filtering and antivirus software, frequently requesting information authorization from users, leading to a surge in domain registration and theft, high risk of running away, and implanting low-cost, personalized phishing software and false advertising into user computers (Fei-Hoon Nah F. et al., 2023). The social issues brought about by GAI extend beyond these concerns, including risks related to social discrimination, unclear accountability, and a lack of trustworthiness.

3. The Influence of Academia and Education

3.1 Influence of Students

Generative AI that can create new data can make it easier for students to learn. Algorithms quickly help students learning tools, look at data, figure out tough questions, and teach them. Students can get lessons and books that are specifically made for their interests and needs. For them, this can not only help them learn faster, but it can also get them excited about learning, make them want to learn, and help them learn on their own. GAI can conduct multidimensional and in-depth analysis of students' performance through corresponding algorithms, surpassing traditional score evaluation systems and enabling students to better understand their own learning characteristics and progress, greatly promoting learning outcomes (Future of Life Institute, 2023). GAI can provide students with ideas and clues, which can quickly help them find inspiration and improve their innovative ideas. However, this technology also poses challenges for learners. Studies have shown that the powerful generative ability of GAI may also lead users to limit their critical thinking and judgment abilities due to excessive trust and reliance on technology, further losing their intuition for questioning and verification, and being misled or deceived by GAI (Enkelejda K. et al., 2023). Therefore, GAI can easily lead to dependency in learning, and long-term use can inhibit students' divergent thinking, reduce their critical thinking ability, and lower their innovative performance in situations without artificial intelligence assistance

(Huang et al., 2024). Students' minds and thinking tend towards linearization and mechanization, and intelligent technologies that were originally intended to empower them inevitably become "spiritual shackles" that hinder human development. Since generative artificial intelligence can provide direct knowledge information and convenient learning tools, humans may also lose the joy of self-directed learning and exploration, or be satisfied with surface learning without delving deeper into understanding and thinking, thereby affecting the depth and breadth of learning. Some scholars believe that even if GAI provides inspiration for students to generate product ideas, it is easy for students to have a negative effect of "self-deprecation" and make them dissatisfied with their innovative performance (Garcia, 2023). The GAI collaboration system can create virtual communication experiences, which may hinder interpersonal interactions between students, hinder the development of emotional intelligence and empathy, and long-term use of GAI may lead to a lack of interpersonal connections (Chris S., 2023).

3.2 Influence of Teachers

In the field of education, generative artificial intelligence (GAI) offers several convenient services for teachers, including data analysis, code generation, and personalized tutoring. These tools can help educators save time and energy, allowing them to focus on deeper thinking and innovation, ultimately improving the efficiency of knowledge production. GAI can provide automatic grading and learning effectiveness evaluation functions, and can also provide personalized suggestions and improvement plans for teachers' tutoring work by analyzing students' answering patterns, thereby improving teachers' work efficiency (Yang et al., 2023). GAI can provide accurate and efficient learning assessment feedback for teachers, which helps them adjust teaching strategies in a timely manner, ensure that teaching activities always revolve around students' needs, and improve teaching effectiveness (Lund et al., 2024). But at the same time, it also brings new challenges to teachers. Because GAI can provide a lot of learning assistance, it is easy for teachers and students to become dependent on it. This not only dilutes communication between teachers and students, blurs the judgment of the teaching profession, but also challenges the traditional teacher's irreplaceability in teaching work, impacts the teacher's dominant position in teaching, and even undermines the teacher's inherent professional understanding, leading to a wrong positioning of their own educational value (Voronkov, A. et al., 2019). GAI can generate ethical and moral issues, which can easily lead to ethical dilemmas for teachers in educating students. The intervention of generative artificial intelligence between teachers and students weakens emotional communication such as body language and facial expressions during the educational process (Obermeyer et al., 2019), making it difficult to meet students' emotional demands and humanistic care(Samuelson P, 2019). When it comes to evaluating teaching effectiveness, reliance on technological assessment might diminish the importance of emotional engagement (Kulkarni et al., 2015). If teachers overly depend on GAI for evaluation, they might overlook the emotional aspects of teacher-student interactions, which are crucial for accurate and fair student evaluations. Thus, while technology can significantly enhance educational processes, it is a double-edged sword. As we utilize generative AI, it

is essential to approach its outputs with caution and critical thinking, ensuring that the role of humans remains central in education and that the core educational values are upheld (Yu Ding & Li Zhengfeng, 2024). GAI should not be allowed to take over the primary role of educators.

3.3 Influence of Academic

On March 29, 2023, leaders in the artificial intelligence industry signed a petition calling for a halt to the development of AI systems more powerful than ChatGPT-4 (Xu L., 2019). This action was in response to the uncontrolled "race to develop and deploy ever more powerful digital minds that no one—not even their creators—can understand, predict, or reliably control," which was seen as a challenge to the unique status of human intelligence (Ma Yuhua & Fang Jiaming, 2024). Currently, GAI's advanced cognitive abilities are relatively limited, particularly in areas related to creativity, critical thinking, reasoning, and problem-solving. This limitation can reduce researchers' motivation to independently explore topics, think autonomously, and solve problems. It is evident that AI, through deep learning, has begun to replace human work in certain fields, making it increasingly difficult to distinguish between works created by generative AI and those created by humans. This raises multiple potential risks for academia, as issues of research ethics and information security are becoming more apparent. Many researchers believe that AI could weaken human agency and autonomy in academic research, especially since generative AI has the ability to produce text similar to human writing (Wang Dazhi & Zhang Ting, 2023). Some scholars express concern about this, noting that using large language models at any stage of academic publishing could pose risks of data breaches and privacy violations (Kong Xiangcheng, 2023). There is also a viewpoint that generating content using ChatGPT undermines the ethical value of research integrity (Zhou Xiang, 2023). Given the current inadequacies in legal frameworks governing AI applications, it is urgently necessary to establish clear, practical, and coherent policies to ensure GAI is integrated into academic work responsibly. Scholars have proposed constructing specific responsibility norms, promoting transparency in research, and strengthening review mechanisms as feasible ways to address the risks posed by AI (Valentin S., 2019). Some focus on the ethical dilemmas of responsibility in academic research and suggest concrete approaches to navigate these issues. Academic publishers and organizations have explicitly refused to recognize AI as an author, and some even refuse to publish images and videos generated by AI, while strictly regulating the use of AI in other processes (Su Jianwei, 2023). In terms of policy research, some scholars have attempted to summarize existing ethical policies, finding that publishers are approaching the use of generative AI in academic publishing with a combination of openness and caution (Bi Wenxuan, 2023). However, specific constructive suggestions have yet to be proposed.

4. Undefined Pros and Cons of Generative Artificial Intelligence

Nonetheless, literature in various domains has evidenced positive capabilities of the generative artificial intelligence. As it can be seen from the case of GAI, the technique has shown enhanced advantages in terms of data acquisition; thus, it might increase the efficiency. Maintaining GAI can be

less expensive in terms of labor expenditure because it is capable of performing repetitive tasks such as data entry and processing of images and speech. Thus, generative AI can create unique content suitable for the specific requirements and preferences of the users. Moreover, further development of generative AI is easy, as it can be applied to any area and in any context, such as NLP, CV, speech recognition, game development, etc. Thus, generative AI has benefits such as creativity, customization, and ability to scale up. GAI can enhance the speed in the analysis of data and also in the design of experiments as a way of enhancing discovery in science. For instance, applying artificial intelligence helps researchers create new molecules of drugs and identify possible treatments for diseases (Huo Junge, 2023). It is also utilized in making synthetic patient data to enable doctors in carryout simulation of diagnosis and treatment learning. Such applications do not limit themselves to enhancing the efficiency of medical research but also expedite the development of new therapies.

While generative artificial intelligence has numerous advantages, it cannot be said that there are no drawbacks here. The training data of generative AI may be biased or contain information gaps; similarly, the output of generative AI may also be wrong and contain bias. This may mislead users, and, in some cases, prove fatal. The use of generative AI can have certain legal and ethical implications concerning copyrights, privacy, and information protection, among others, as discussed in (Dou Xiaodong, 2023). This has to be done in line with relevant laws and regulatory measures to control and oversee. Generative AI technology utilizes a lot of data for training in order to produce very good text or image. It is mentioned that if the data volume is insufficient or the data quality is not high, the generated results may be limited (Zhang Xin, 2023). The main disadvantages of GAI include the following; Data Privacy, Data Bias, Opacity, and Data hungry. As targeted laws, regulations, and regulatory provisions have developed relatively recently and at the present, there is no focus on new potential risks that may emerge in the future and as a result, the cost of maintaining the security of generative artificial intelligence is steadily rising. They do not mean that there is no value in using generative AI systems at all. On the other hand, it is a promising concept that can be used in various fields with ease. However one must ensure that one realizes the pros as well as the conns of this technology and observe certain measures that are important in dealing with the difficulties that are encountered in this technology.

5. Undefined Approaches to the Development of Generative Artificial Intelligence

In light of this, what if AI were ever to attain intelligence and agency similar to those of human beings? This question goes far beyond the sphere of technology and has essential social consequences. In an attempt to counter the various vices that generative AI has been associated with, the following measures have been adopted:

Firstly, Undefined Many authors and organizations have put forward ethical standards for the creation and application of GAI. There are ethical principles which have been deemed appropriate to be followed while applying GAI and they include; transparency, accountability, fairness, privacy and

ethical auditing as postulated by some organizations and researchers (Su Yu, 2022). It is to guarantee that GAI creation and application are guided by intrinsic values while safeguarding human rights and assessing if the developed GAI systems are ethically acceptable. It enables the detection of some hidden risks and biases in GAI models before their execution and implementation. At present, the IEEE has created certification standards for privacy protection, algorithmic discrimination, algorithmic transparency, and algorithmic accountability, which makes up a relatively more complete certification system (Li Zhiying, 2024). This acts as an ethical certification and evaluation system for generative AI technology and try to see whether there are third party evaluation frameworks. GAI ethical certification should encompass the principles such as transparency, accountability, algorithmic fairness and privacy in AI, and should be assessed by third parties. If third party evaluation is pre prepared then the accountability system is the Second assurance. Promote an enforcement mechanism for responsible GAI use and heavily control output of generative artificial intelligence with prejudicial information. In the case of the internal operating mechanism of unknown generative artificial intelligence models, the corresponding providers require legal justification and clarification of their processes. Educate the single user in the population to practice moderation. Finally, in April 2023, the US Department of Commerce published for public comment the following questions about AI models: Certified before deployment?

Secondly, create the necessary legislative measures that can regulate the usage of artificial intelligence. Government regulatory agencies should efficiently oversee and manage the generation and development of generative artificial intelligence through policy legislation (Chen Bing, 2023). The policy framework created should complement the legislative and regulatory contexts of other countries and be updated as GAI progresses to enhance the relevance of effective regulations (Liu Yanhong, 2023). In fact, the European Union has created an international reference framework for artificial intelligence through the Artificial Intelligence Act to prevent discrimination, surveillance, and other potential future risks, particularly regarding fundamental rights. The Act identifies some of the restricted applications of AI, including the use of facial recognition technology in the public domain. The U. S. FTC specifically polices AI-associated deceptive and unfair conduct by means of legislation such as the Fair Credit Reporting Act and the Federal Trade Commission Act. AI legislation in the U. S. and Europe emphasizes self-regulation, supports technological innovation, and focuses on five core principles: continuity in safe and effective systems, mitigation of algorithmic bias, data confidentiality and anonymization, option and explanation, and the principle of substitutability. These principles were outlined in the “Blueprint for an AI Bill of Rights” issued by the White House in October 2022.

Thirdly, Undefined According to some authors, the creation of capacities for data protection, the safety of algorithm models, the possibility of self-regulation, and security of generative content may alleviate some of the intrinsic risks of GAI. Some suggest increasing the safe use of generative AI by applying risk scoring theory as a measure. This approach employs the likelihood and severity of risks as benchmark measures; sorts them according to the levels of risk and applies various degrees of

regulation. In January 2023, the National Institute of Standards and Technology (NIST) in United States published an AI Risk Management Framework, which contains a clear classification and categorization of risks associated with Artificial Intelligence. Also, there are attempts to design new governance technologies in the context of generative AI, including govern-tech – intelligent systems that use AI to govern AI and regulate algorithms with algorithms; The idea to offset the deficiency of enforcement of regulations with the idea of 'powering technology,' is considered as a future approach to addressing problems of generative AI.

6. Conclusion

Thus, GAI appears as a new phase in the development of artificial intelligence technology. Yet, owing to the uncertainties of GAI technologies, the continuously growing pace at which they are advancing, and the fact that they present various and subtle risks, governance solutions remain behind. Hence, for us, it is crucial to meet the requirement of "leading role of the reflection of technological and social risks" to prepare for the massive application of GAI in advance. In response to the challenges posed by generative artificial intelligence, we actively conduct experiments and controls on the risks in the process of developing GAI through technology and law, focus on compliance and security at the data level, on explainability and fairness at the algorithm level, but also strive for the sound, healthy and sustainable development of the GAI industry, ensuring the stable and enduring development and application of GAI on an expected path.

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