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Integrating AI into Academic Research: How We Navigate the Inevitable Ethically

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Abstract
The integration of Artificial Intelligence (AI) in research has brought about a radical change to how knowledge is approached and produced. In higher education research, the use of AI tools, such as ChatGPT, plagiarism detectors, AI document management, and writing assistants, has become widespread. One of the most recent AI tools, i.e., ChatGPT (a chatbot developed by OpenAI and launched on November 30, 2022), has sown discords and stirred divisions among its users. Students and researchers could accomplish their tasks sooner with less effort, thanks to ChatGPT. Both sides could make use of the transformative power and intelligence of ChatGPT to help them generate various contents, such as text, audio, images, synthetic data, or even ask for suggestions. Basically, ChatGPT can serve as our dearest personal assistant, who understands and answers our commands, requests, and questions, to help authors progress at a faster speed, disciplinarily and interdisciplinarily. On the other hand, integrating the use of ChatGPT into research content may not be

recommended due to its conflicting ethical use issues. Thus far, no legal or ethical regulations have emerged to resolve the dynamic intricacies of these situations. However, best practices to overcome the challenges could provide lessons to learn, giving us insights regarding what has been planned and implemented, and what requires more attention and refinement or improvement.

Keywords: academic research, Artificial Intelligence, ChatGPT, ethics, higher education.

7.1. Introduction

Artificial Intelligence (AI) has significantly transformed the way we conduct research in academia. With technological advancement and the availability of massive data, researchers have at their disposal more powerful tools than ever before to analyze, interpret, and generate knowledge. However, this technological revolution poses a number of ethical challenges that must be addressed in a rigorous and reflective manner (Cabanelas, 2019).

In the study, we will explore the ethics in the use of AI in university research. We will also examine the ethical principles that should guide the work of researchers in the field from data collection and analysis to the publication of results. Furthermore, we will discuss case studies and proposals to promote responsible and ethical research practices.

As AI is currently understood, it refers to the development of systems and machines capable of performing tasks that require human intelligence. These tasks include but are not limited to pattern recognition, natural language processing, decision making and problem solving (Cabanelas, 2019; Cortina, 2019, 2022; Government of Spain, 2023).

In university research, AI has been used in a wide range of disciplines, including medicine, biology, engineering, social sciences, and humanities. Some common applications include genomic data analysis, disease prediction, industrial process optimization, text analysis and machine translation (Holmes et al. 2021; Money & Grupo, 2019; Sánchez-García et al., 2023), not to mention the enormous benefits in the personalization of learning that good practices seem to indicate.

On the other hand, some of the AI real-world applications in higher education research that many of us find useful on a daily

basis include but are not limited to plagiarism detection (Ade-Ibijola et al., 2022), AI document management, creation of augmented reality or 3D images, and writing assistants. ChatGPT, which was recently launched on November 30, 2023 (currently ChatGPT 3.5 free version and ChatGPT 4.0 paid version) has especially 'wreaked' havoc on the publication industry. The superability of generative AI chatbot with a Large Language Model (LLM) has been capable of processing tasks based on user prompts (Ahmad et al., 2023). Finally, the consensus in the literature on the need to address the ethical aspect in a standardized manner to avoid collateral damage in the use of these technologies is indisputable.

To date, there has been no evidential clarity whether and how far AI is allowed for use in academic work, projects, or research (Nguyen et al., 2023; Zevedi, 2023). Thus far, no policies have been designed, no regulations have been implemented to resolve any ethically educational issues related to research, no framework has been formulated, and no guidelines have been concluded (Zevedi, 2023). All these are also due to the dynamic nature of AI - which is once again hard to keep up (Zevedi, 2023). However, there are already a multitude of guides, articles and books on how to use these new tools that are revolutionizing the academic world (Craig, 2023). The evidence confirms that AI technology has caused concerns among its users (Stahl B. C., 2021) and challenges, especially in the educational sector (Malik et al., 2023), hence the need for a reflection on the topic.

This study thus sought to address how the use of AI enhances our research and, at the same time, diminishes it in various aspects. In addition, the study provided instances of cases as well as best practices for using AI in research.

7.2. Literature Review

The literature review section highlights the definitions of AI, ChatGPT, and trends, opportunities, and challenges of using AI in academic research areas.

Artificial Intelligence, as Google defines it, is mankind-created systems to perform tasks that need human intelligence, among others, "decision making, visual perception, speech rec-

ognition, and language translation" (Xu et al., 2021; Sethuraman, 2023). In other words, AI can also be defined as the capability of computer-controlled robots which can execute tasks that commonly correlate with intelligent beings (https://www.britannica.com/technology/artificial-intelligence). The respective jargon is used to describe systems development that resembles human intellectual processing: "the ability to reason, discover meaning, generalize, or learn from past experience" (https://www.britannica.com/technology/artificial-intelligence).

It has been evident that AI, especially with the recent ChatGPT, has majorly affected how we perceive, create, use, treat, produce, and reproduce knowledge. It cannot be denied that AI has very essential roles in education (Ahmad et al., 2023). Notwithstanding its essential roles, AI is not immune to ethical concerns and false or erroneous information (Buriak et al., 2023; Whittaker et al., 2018). Ethical issues and concerns (societal implications emanating from the use of AI) include but are not limited to consent issues, data misuse, loss of freedom, and loss of human decision-making power (Stahl, 2021).

To clarify our understanding of AI, we cannot afford not to look at how it started in 1951, when scientists were only trying to make computers be able to play checkers (https://britannicaeducation.com). Yet, basically, AI is not only confined to a concept about robots but also about "understanding the nature of intelligent thought and action using computers as experimental devices" (Buchanan, 2005, p. 54). Then, in the 1930s, as AI was evolving, an exploration into the so-called Machine Intelligence was started by the computer pioneer Alan Turing (Buchanan, 2005).

AI in the real world has been variously applied to different areas, including: education and learning; IoT applications and smart cities; business and finance; social media; virtual reality and assistance; agriculture; healthcare and medical systems; surveillance; travel and transport; entertainment and games; industry; autonomous vehicles; intelligent systems, robotics, and automation; Internet, search engines, and recommendations; cybersecurity and threat intelligence; Natural Language Processing; and computer vision (Sarker, 2022).

Accords and discords have been well recorded in the divisive use of ChatGPT in academic writing or research writing (Frye &

ChatGPT, 2022). Publishing companies have not been able to decide whether authors could have ChatGPT as their co-authors (Frye & ChatGPT, 2022). Several problems that may hinder its realization are whether ChatGPT can be held accountable for any errors contained in the research, and the possession of personal details, such as first name, last name, date of birth, and position, among others. Co-authorship of ChatGPT directly or indirectly could slowly replace human authorship in a project, especially when the human authors eventually rely too heavily on prompting ChatGPT during the writing process, causing the entire ideas to lose originality (Frye & ChatGPT, 2022).

AI has also impacted a comprehensive range of fundamental sciences, including Mathematics, Medical Science, Materials Science, Geoscience, Life Sciences, Physics, and Chemistry (Xu et al., 2021). However, despite the progress, machine learning security risks on data and machine learning models remain as one of the threats. It is essential that machine learning systems that are robust be built to prevent the leakage of sensitive data (Xu et al., 2021).

7.3. Methodology

This study was conducted using a qualitative method of data analysis. More specifically, the study is a conceptual paper where the authors discuss a current theory or phenomenon that has not been fully explained or understood, especially in the case of AI and Academic Research. The research did not have any primary data collection and rather focused on conceptual pieces through connecting existing interdisciplinary theories and generating insightful discussion to eventually challenge our assumptions and expand our worldview (Cropanzano, 2009). This could be achieved by formalizing an idea or a position that has not been addressed before. Thus, a meticulous prior literature review was integrated to yield new conceptualizations or applications (Watts, 2011).

The terminologies of AI, ChatGPT, and AI Ethics are defined in this section to facilitate future researchers and readers in understanding our work and standpoint clearly. In our research, AI is basically defined as:

> the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. (https://www.britannica.com/technology/artificial-intelligence)

ChatGPT, as a product of AI, is

> software that allows a user to ask it questions using conversational, or natural, language. It was released on November 30, 2022, by the American company OpenAI and almost immediately disturbed academics, journalists, and others due to the concern that it was impossible to distinguish human writing from ChatGPT-generated writing. (https://www.britannica.com/technology/ChatGPT)

AI ethics as one of the guiding principles for AI users and the core discussion in the study is "a set of values, principles, and techniques that employ widely accepted standards of right and wrong to guide moral conduct in the development and use of AI technologies" (Rees & Müller, 2023, p. 1241).

7.4. Discussion

Though the ethical principles governing the use of AI cannot keep up with the speed of AI, there are several underlying norms in research ethics that are still considered practicable. One of the most recent AI ethics (Cath et al., 2018; Floridi et al., 2021; Nilsson, 1982) prioritizes transparency and explainability, fairness and equity, privacy, and confidentiality, and eventually, responsibility and accountability.

In terms of transparency and explainability, researchers should strive to make the processes and algorithms used in their research transparent. This involves providing detailed information on how data were collected and processed, as well as how Artificial Intelligence models were trained and validated. Fairness and equity are another set of principles to ensure that Artificial Intelligence algorithms do not perpetuate or amplify existing

biases in the data. Researchers should carefully assess the impact of their research on different social groups and take steps to mitigate potential bias and discrimination. Thus, privacy and confidentiality are the two areas that highlight principles where researchers should respect the privacy and confidentiality of the data used in their research. This involves obtaining informed consent from participants and ensuring that adequate measures are taken to protect sensitive information. Finally, responsibility and accountability principles require that researchers are responsible for decisions and actions taken in the development and application of Artificial Intelligence systems. They should be aware of the potential consequences of their research and be prepared to be accountable for them.

There have been quite a few examples and infinite possibilities of AI application. However, a couple of situations have been selected where an appropriate use of Artificial Intelligence is evident (Hutter, 2004).

In the Case Study of the *Use of Artificial Intelligence in Candidate Selection*, imagine a scenario in which a university uses Artificial Intelligence algorithms to select candidates for its graduate programs. If these algorithms are not properly designed, they could introduce unfair biases into the selection process, discriminating against certain groups of people. To address this problem, researchers must ensure that the algorithms used are fair and equitable. This may involve removing sensitive variables, such as race or gender, from prediction models, and regularly evaluating their performance in terms of fairness.

Data collection has become a crucial step in university research, and it also raises important ethical considerations. Researchers must ensure that they obtain informed consent from participants and respect their privacy and confidentiality. In addition, it is important to consider the potential impact of data collection on the communities and groups involved. For example, in studies involving vulnerable communities, researchers should take additional measures to ensure the protection and well-being of participants.

Following the questions raised, we incorporate a series of proposals for an Ethical Research in AI (Bostrom & Yudkowsky, 2018; Cath, 2018; Zevedi, 2023) that we consider interesting in order not to fall into the temptation of misusing the tools:

- Ethics Training for Researchers. It is essential that researchers receive training in ethics and good practices in the use of Artificial Intelligence. This may include courses and workshops on ethical principles, as well as guidance and advice on the application of these principles in research practice.
- Research Ethics Review. Academic institutions should establish ethics review committees dedicated to evaluating and overseeing research involving the use of AI. These committees can provide guidance and advice to researchers, and ensure that the highest ethical standards are met.
- Transparency, Reproducibility, and Reusability and Research Data Management. Researchers should be committed to transparency and reproducibility in their research. This implies providing access to the data and algorithms used, as well as to the methods and procedures employed in data analysis. Transparency and reproducibility are essential to ensure the integrity and reliability of scientific research. Along with transparency and reproducibility, reusability and research data management should be taken into consideration. Reusability and research data management highlight the importance of the minimum requirement of all archival documentation including AI-specific metadata, ethics applications and votes.

7.5. Conclusion

The speed at which AI has unpredictably progressed exceeds the speed of our ethical institutions in regulating what has been created out of Artificial Intelligence (González-Esteban & Calvo, 2022). Ethics in the use of Artificial Intelligence in university research is a vitally important issue that must be addressed in a rigorous and thoughtful manner. Researchers must adhere to fundamental ethical principles, such as transparency, fairness, privacy, and accountability, at all stages of their work. In addition, concrete measures, such as ethics training, ethical review of research, and promotion of transparency and reproducibility, need to be implemented to ensure that Artificial Intelligence research is conducted in an ethical and responsible manner. Only in this way will we be able to make use of its potential without losing the identity of the researcher.

As Cortina (2022) explains,

> the prestige of science is linked to its capacity for verification or falsification, within the framework of possible experience. Attempting to gain that prestige and credibility with statements that far exceed the possibility of actual or possible corroboration, pretending that they are scientific, is a blatant deception, which goes against the goal of science, against its most basic ethos. A scientific utopia is simply a deception. (p. 473)

7.6. Recommendations for Best Practices

The position that prevails in the literature shows a consensus on the need to unify initiatives for the ethical use of AI (Nodals, 2020). For this reason, we find good practices and attempts to structure guidelines that guide the development of an ethical and responsible use of these technologies in science, society, and technology. However, these practices are presented in isolation and detached from the regulatory part. Piedra Alegría (2022) presents 2 proposals on how the problems arising from the implementation of AI should be addressed.

The first proposal highlights a hard regulatory approach (hard law) that seeks the creation of a legal framework that addresses the creation of clear rules, laws or regulations that define the action framework for AI. Some examples of good practices in this regard are the Chinese AI proposal of the year 2017 "New Generation Artificial Intelligence Development Plan" (AIDP) and China New Generation Artificial Intelligence Development Report of 2019.

The second proposal discusses a soft approach (soft law), considering recommendations, declarations, and manifestos that serve to generate guidelines. Based on this point of view, the European Parliament (2020) raises the urgency of adopting transparent systems that generate trust to avoid harmful uses. This proposal is adopted by the European Union (i.e., Ethical Guidelines for a trustworthy AI), the United States (i.e., Preparation for the Future of Artificial Intelligence) and Russia (i.e., Кодекс этики в сфере — Ethical Code of AI), to mention some cases (Joy Stone, 2022). The second approach

is currently the most developed and responds to an ethical approach led by specialists in this area and by academics in general. This is mainly due to not having efficient and agreed legal regulations yet.

References

Ade-Ibijola, A., Young, K., Sivparsad, N., & Seforo, M. (2022). Teaching students about plagiarism using a serious game (Plagi-Warfare): Design and evaluation study. *JMIR Serious Games*, *10*(1), e33459. https://doi.org/10.2196/33459

Ahmad, S. F., Han, H., Alam, M.M., Rehmat, M. K., Irshad, M., Arraño-Muñoz, M., & Ariza-Montes, A. (2023). Impact of Artificial Intelligence on human loss in decision making, laziness and safety in education. *Humanit Soc. Sci. Commun.*, *10*(311), 1-14. https://doi.org/10.1057/s41599-023-01787-8

Balel, Y. (2023). The role of Artificial Intelligence in academic paper writing and its potential as a co-author: Letter to the editor. *European Journal of Therapeutics*, *29*(4), 984-985. https://doi.org/10.58600/eurjther1691

Barceló-Ugarte, T., Pérez-Tornero, J. M., & Vila-Fumàs, P. (2021). Ethical challenges in incorporating Artificial Intelligence into newsrooms. In *News Media Innovation Reconsidered: Ethics and Values in a Creative Reconstruction of Journalism* (pp. 138-153). https://doi.org/10.1002/9781119706519.ch9

Bates, T., Cobo, C., Mariño, O., & Wheeler, S. (2020). Can Artificial Intelligence transform higher education? *International Journal of Educational Technology in Higher Education*, *17*, 42 (2020) https://doi.org/10.1186/s41239-020-00218-x

Bleher, H., & Braun, M. (2023). Reflections on putting AI ethics into practice: How three AI ethics approaches conceptualize theory and practice. *Science and Engineering Ethics*, *29*, 1-21. https://doi.org/10.1007/s11948-023-00443-3

Bostrom, N., & Yudkowsky, E. (2018). The ethics of Artificial Intelligence. In *Artificial Intelligence Safety and Security* (pp. 57-69). https://doi.org/10.1201/9781351251389-4

Britannica Education (2023, August 7). AI in Education: Introduction. *Britannica Education*. https://britannicaeducation.com/blog/ai-in-education/#:~:text=The%20History%20of%20AI&text=The%20

first%20AI%20program%20was,teaching%20a%20computer%20to%20checkers.

Buchanan, B. G. (2005). A (very) brief history of Artificial Intelligence. *AI Magazine*, *26*(4), 53. https://doi.org/10.1609/aimag.v26i4.1848

Buriak, J. M., Akinwande, D., Artzi, N., Brinker, C. J., Burrows, C., Chan, W. C. W., Chen C., Chen, X., Chhowalla, M., Chi, L., Chueh, W., Crudden, C. M., Di Carlo, D., Glotzer, S. C., Hersam, M. C., Ho, D., Hu, T. Y., Huang, J., Javey, A., Kamat, P. V., Kim, I., Kotov, N. A., Lee, T. R., Lee, Y. H., Li, Y., Liz-Marzán, L. M., Mulvaney, P., Narang, P., Nordlander, P., Oklu, R., Parak, W. J., Rogach, A. L., Salanne, M., Samorì, P., Schaak, R. E., Schanze, K. S., Sekitani, T., Skrabalak, S., Sood, A. K., Voets, I. K., Wang, S., Wang, S., Wee, A. T. S., & Ye, J. (2023). Best practices for using AI when writing scientific manuscripts: Caution, care, and consideration: creative science depends on it. *ACS Nano*, *17*(5), 4091-4093. https://doi.org/10.1021/acsnano.3c01544

Cabanelas Omil, J. (2019). Inteligencia artificial ¿Dr. Jekyll o Mr. Hyde? *Mercados y Negocios*, *1*(40), 5-22.

Cath, C. (2018). Governing Artificial Intelligence: ethical, legal and technical opportunities and challenges. *Philosophical Transactions of the Royal Society. Mathematical, Physical and Engineering Sciences*, *376*(2133), 20180080.

Cath, C., Wachter, S., Mittelstadt, B., Taddeo, M., & Floridi, L. (2018). Artificial Intelligence and the 'good society': the US, EU, and UK approach. *Science and Engineering Ethics*, *24*, 505-528.

Centre Responsible Digitality (ZEVEDI). (2023). Research Ethics for AI Research Projects: Guidelines to support the work of ethics committees at universities. V. 1.0. Darmstadt.

COPE Council (2021). COPE *Discussion Document: Artificial Intelligence (AI) in Decision Making* (pp. 1-9). https://doi.org/10.24318/9kvAgrnJ

Cortina, A. (2022). Los desafíos éticos del transhumanismo. *Pensamiento. Revista de Investigación e Información Filosófica*, *78*, 471-483. https://doi.org/10.14422/pen.v78.i298.y2022.009

Cortina Orts, A. (2019). Ética de la inteligencia artificial. In *Anales de la Real Academia de Ciencias Morales y Políticas* (pp. 379-394). Ministerio de Justicia.

Craig, D.F. (2023). Computadoras que aprenden. Guía básica para docentes sobre inteligencia artificial en educación. Diego Craig.

Cropanzano, R. (2009). Writing nonempirical articles for *Journal of Management*: General thoughts and suggestions. *Journal of Management*, *35*(6), 1297-1581. https://doi.org/10.1177/0149206309344118

Deranty, J.P., & Corbin, T. (2022). Artificial Intelligence and work: A critical review of recent research from the social sciences. *AI & Soc*. 1-17 https://doi.org/10.1007/s00146-022-01496-x

Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., Lütge, C., Madelin, R., Pagallo, U., Rossi, F., Schafer, B., Valcke, P., & Vayena, E. (2018). AI4People. An ethical framework for a good AI society: opportunities, risks, principles, and recommendations. *Minds and Machines*, *28*(4). 689-707. https://doi.org/10.1007/s11023-018-9482-5

Frye, B. L. (2023). Should using an AI text generator to produce academic writing be plagiarism? *Fordham Intellectual Property, Media & Entertainment Law Journal*, *33*, 947-969.

Gilson, L. L., & Goldberg, C. B. (2015). Editors' comment: so, what is a conceptual paper? *Group & Organization Management*, *40*(2), 127-130. https://doi.org/10.1177/1059601115576425

Gobierno de España (2023, April 19). *Qué es la inteligencia artificial. Plan de recuperación, transformación y resiliencia.* Gobierno de España. https://planderecuperacion.gob.es/noticias/que-es-inteligencia-artificial-ia-prtr

González-Esteban, E, & Calvo, P. (2022). Ethically governing Artificial Intelligence in the field of scientific research and innovation. *Heliyon*, *8*(2), 1-9. https://doi.org/10.1016/j.heliyon.2022.e08946

Guan, X., Feng, X., & Islam, A. A. (2023). The dilemma and countermeasures of educational data ethics in the age of intelligence. *Humanit. Soc. Sci. Commun.*, *10*, 138. https://doi.org/10.1057/s41599-023-01633-x

Holmes, W., Hui, Z., Miao, F., & Ronghuai, H. (2021). Inteligencia artificial y educación: guía para las personas a cargo de formular políticas. UNESCO.

Hutter, M. (2004). Universal Artificial Intelligence: Sequential Decisions based on algorithmic probability. Springer Science & Business Media.

Juca-Maldonado, F. (2023). El impacto de la inteligencia artificial en los trabajos académicos y de investigación. *Revista Metropolitana de Ciencias Aplicadas*, *6*(S1), 289-296.

Liebrenz, M., Schleifer, R., Buadze, A., Bhugra, D., & Smith, A. (2023). Generating scholarly content with ChatGPT: ethical challenges for medical publishing. *The Lancet*, *5*(3), E105-E106. https://doi.org/10.1016/S2589-7500(23)00019-5

Malik, A. R., Pratiwi, Y., Andajani, K., Numertayasa, I. W., Suharti, S., Darwis, A., & Marzuki. (2023). Exploring Artificial Intelligence in

academic essay: higher education student's perspective. *International Journal of Educational Research Open, 5*(100296), 1-11. https://doi.org/10.1016/j.ijedro.2023.100296

Mittelstadt, B. (2019). Principles alone cannot guarantee ethical AI. *Nature Machine Intelligence, 1*(11), 501-507. https://doi.org/10.1038/s42256-019-0114-4

Mooney, P., & Grupo, E. T. C. (2019). La insostenible agricultura 4.0: digitalización y poder corporativo en la cadena alimentaria. Grupo ETC

Nguyen, A., Ngo, H.N., Hong, Y., Dang, B., & Nguyen, B. T. (2023). Ethical principles for Artificial Intelligence in education. *Educ. Inf. Technol., 28*, 4221-4241. https://doi.org/10.1007/s10639-022-11316-w

Nilsson, N. J. (1982). *Principles of Artificial Intelligence*. Springer Science & Business Media.

Nodals García, C.L. (2021). Sobre la necesidad de unificación de las iniciativas para un uso ético de la Inteligencia Artificial. *Socialium, 5*(2), 318-334. https://doi.org/10.26490/uncp.sl.2021.5.2.880

OECD. (2023). Artificial Intelligence in Science: Challenges, opportunities and the future of research. OECD.

Piedra Alegría, J. (2022). Descolonizando la "ética de la inteligencia artificial". *Dilemata, 38*, 247-258.

Piedra Alegría, J. (2023). Anotaciones iniciales para una reflexión ética sobre la regulación de la inteligencia artificial en la Unión Europea. *Revista de Derecho, 28*, e3264. https://doi.org/10.22235/rd28.3264

Rees, C., & Müller, B. (2023). All that glitters is not gold: trustworthy and ethical AI principles. *AI Ethics, 3*, 1241-1254. https://doi.org/10.1007/s43681-022-00232-x

Sánchez-García, P., Merayo-Álvarez, N., Calvo-Barbero, C., & Díez-Gracia, A. (2023). Spanish technological development of Artificial Intelligence applied to journalism: companies and tools for documentation, production and distribution of information. *Profesional de la Información, 32*(2), e320208. https://doi.org/10.3145/epi.2023.mar.08

Sarker, I.H. (2022) AI-based modeling: techniques, applications and research issues towards automation, intelligent and smart systems. *SN Computer Science, 3*, 158. https://doi.org/10.1007/s42979-022-01043-x

Sethuraman, K. R. (2023). Best practices for the use of generative Artificial Intelligence for authors, peer reviewers, and editors. *International Journal of Advanced Medical and Health Research, 10*(2), 61-63. http://doi.org/10.4103/ijamr.ijamr_306_23

Special Committee on Artifical Intelligence in a Digital Age (2022, April 5). *Report on Artificial Intelligence in a Digital Age*. European Parliament. https://www.europarl.europa.eu/cmsdata/246872/A9-0088_2022_EN.pdf

Stahl, B.C. (2021). Ethical Issues of AI. In *Artificial Intelligence for a Better Future. An Ecosystem Perspective on the Ethics of AI and Emerging Digital Technologies* (pp. 35-53). Springer. https://doi.org/10.1007/978-3-030-69978-9_4

Watts, R. E. (2011). Developing a conceptual article for publication in counseling journals. *Journal of Counseling & Development*, *89*(3), 308-312. https://doi.org/10.1002/j.1556-6678.2011.tb00094.x

Whittaker, M., Crawford, K., Dobbe, R., Fried, G., Kaziunas, E., Mathur, V., West, S. M., Richardson, R., Schultz, J., & Schwartz, O. (2018). *AI Now Report 2018*. AI Now Institute. https://ec.europa.eu/futurium/en/system/files/ged/ai_now_2018_report.pdf

Xu, Y., Liu, X., Cao, X., Huang, C., Liu, E., Qian, S., Liu, X., Wu, Y., Dong, F., Qiu, C., Qiu, J., Hua, K., Su, W., Wu, J., Xu, H., Han, Y., Fu, C., Yin, Z., Liu, M., Roepman, R., Dietmann, S., Virta, M., Kengara, F., Zhang, Z., Zhang, L., Zhao, T., Dai, J., Yang, J., Lan, L., Luo, M., Liu, Z., An, T., Zhang, B., He, X., Cong, S., Liu, X., Zhang, W., Lewis, J. P., Tiedje, J. M., Wang, Q., An, Z., Wang, F., Zhang, L., Huang, T., Lu, C., Cai, Z., Wang, F., & Zhang, J. (2021). Artificial Intelligence: a powerful paradigm for scientific research. *The Innovation*, *2*(4), 100179. https://doi.org/10.1016/j.xinn.2021.100179