Scientia Moralitas International Journal of Multidisciplinary Research
ISSN 2472-5331 (Print) | ISSN 2472-5358 (Online) | Vol. 8, No. 2, 2023
DOI: 10.5281/zenodo.10429925

Ethical Considerations in Artificial Intelligence Development and Deployment

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ABSTRACT: This article addresses the complex web of ethical considerations pertaining to artificial intelligence (AI). The paper provides a preliminary analysis of theoretical frameworks and practical implications deriving from the development and deployment of AI. We explore the ethical challenges posed by AI in domains such as privacy, bias, accountability, transparency, and the impact on employment. Existing ethical guidelines are discussed and a framework for ethical AI development is proposed, thus bringing a contribution to the ongoing discussion on responsible AI implementation. In this way, the paper is also a guide for fostering a more ethically sound and socially responsible integration of artificial intelligence technologies.

KEYWORDS: Artificial intelligence, technology, privacy, ethical accountability, technological future

Introduction

The much-celebrated launching of ChatGPT on November 30, 2022, marks the birth of a new era, not only technologically, but more generally, in as much as Artificial Intelligence (AI) proves to be a transformative force, revolutionizing industries, societies, and economies at an unprecedented pace. As the capabilities of AI continue to advance, it becomes increasingly imperative to also ponder the ethical dimensions that accompany its development and deployment. The seamless integration of AI into our daily lives raises profound ques-

tions about privacy, bias, accountability, and transparency, prompting a critical examination of the ethical, and therefore legal (Carrillo 2020), landscape surrounding these technologies. It could be argued that the more autonomous AI becomes, the more it ought to be subject to the same ethical considerations as its human creator (Thomsen 2019, 35963).

The historical trajectory of AI development (Floridi 2023, 3–13; Todorova 2023, 1–9) is pushing for a paradigm shift that necessitates a thoughtful and deliberate approach to ethical considerations. Evidently, the potential benefits of AI are immense, ranging from enhanced efficiency and innovation to improvements in healthcare, education, and various other sectors. However, these advancements come with a host of ethical challenges that demand our attention (Siau 2020, 74–87). Thus, the need for careful research in this area, despite the evident challenges of assigning ethical value to a non-human entity (Jameel et al 2020; Burkert 2017, 8–13). Privacy concerns loom large as AI systems process vast amounts of personal data, raising questions about surveillance, consent, and the responsible use of information. The spectre of bias in AI algorithms introduces ethical dilemmas related to fairness, justice, and the perpetuation of societal inequalities. Moreover, issues of accountability and transparency in AI decision-making pose challenges in understanding, interpreting, and challenging the outcomes of automated processes.

This paper aims to provide a preliminary exploration of such ethical considerations by drawing upon established ethical theories and previous discussions on technological ethics (Berg 2018, 151–53; Boddington et al. 2017, 569–74; Dignum 2018, 1–3). By undertaking an examination of privacy, bias, accountability, and transparency, as related to the use of AI, we will not only engage in the ongoing dialogue on responsible AI development, but also will hopefully bring a contribution to this insufficiently explored ethical field. Thus, as we navigate the intricate ethical landscape of AI ethics, we propose a synthesis of existing ethical guidelines and the formulation of a robust framework for guiding the ethical implementation of AI technologies. In doing so, we hope to foster a deeper understanding of the ethical challenges posed by AI, offering insights that extend beyond theoretical discourse to practical applications. The ethical dimensions of AI are not only pertinent to researchers and developers but also crucial for policymakers, businesses, and society at large. This paper, therefore, endeavors to shed light on the multifaceted nature of AI ethics, providing a foundation for responsible AI practices that align with contemporary societal values and expectations.

Ethical Foundations

It is undeniable that the ethics we embrace serve as the compass that guides our moral decision-making, and the development and deployment of artificial intelligence are no exception to this. However, not all ethics is the same! Thus, we will start with a brief overview of three major ethical theories (Stahl, 2021, 20–21; Boddington 2017, 7–24) and show how these underpin discussions surrounding AI ethics.

The first theory we would note is utilitarianism (Scarre 1996). Rooted in consequentialist ethics, utilitarianism posits that the moral worth of an action is determined by its overall utility in maximizing happiness or well-being. In the context of AI, utilitarian perspectives may advocate for the development of systems that maximize societal benefits, such as improved efficiency, accessibility, and resource allocation. However, creating a moral hierarchy based solely on the usefulness of an object, person, or action caries inherent dangers – it can pose a challenge to basic notions of human dignity and equality, especially when such notions are upholding human worth above such rationale as the value of one's participation to the common good (Măcelaru 2021, 596–608; Kanuck 2019, 3–12).

Second, we should note deontological ethics (Tännsjö 2013, 59–77), which emphasizes the inherent nature of actions rather than their consequences. Adherents of deontology argue that certain actions are inherently right or wrong, regardless of the outcomes. In the realm of AI, deontological considerations may center around the ethical development of the technology itself, regardless of the potential benefits or drawbacks it offers.

Third, we note virtue ethics (Tännsjö 2013, 95–112), which focuses on the development of virtuous character traits and emphasizes the importance of moral character in ethical decision-making. Applying virtue ethics to AI involves considering the virtues and values embedded in the design and deployment of AI systems, promoting virtues such as fairness, transparency, and accountability. As we will see shortly below, such notions pose a challenge in the discussion of AI ethics in as much as the technology itself can be used to the detriment of these principles and the practices they entail.

Thus, the application of ethical theories to AI requires a nuanced understanding of how these theories intersect with the unique challenges posed by autonomous systems. Utilitarian perspectives may prompt questions about the overall moral value behind the societal impact of AI, while

deontological considerations may lead to inquiries about the intrinsic morality of specific algorithms. Virtue ethics, on the other hand, encourages the cultivation of virtuous traits within the AI development process itself. It seems, therefore, that finding a balance between utilitarian and deontological perspectives is crucial in addressing the ethical complexities of AI. Striking this balance involves optimizing societal benefits while respecting fundamental ethical principles. Recognizing the dynamic interplay between these ethical theories and their application to the complex landscape of artificial intelligence is the first step in laying the groundwork for a comprehensive ethical framework that harmonizes diverse moral considerations.

Ethical Challenges in Artificial Intelligence

As noted above, the rapid evolution of artificial intelligence has ushered in a new era of technological capabilities, transforming industries and societies worldwide. Yet, the proliferation of AI technologies brings with it a complex web of ethical challenges that necessitate careful consideration (Nath and Sahu 2017, 103–11). The key ethical challenges associated with AI include issues of privacy, bias, accountability, and transparency (Boddington 2017, 27–38). By scrutinizing these challenges below, we aim to shed light on the ethical dimensions that accompany the integration of AI into various aspects of our lives.

Privacy Concerns

One of the foremost ethical challenges in the realm of AI revolves around the extensive surveillance and data collection practices employed by AI systems (Abell 2020, 15–20). As these systems process vast amounts of personal information, concerns arise regarding the potential infringement on individual privacy. The indiscriminate gathering of data for algorithmic analysis raises questions about the boundaries between public interest and personal privacy. In this regard, the ethical implications of AI extend to the concept of informed consent. Individuals may unknowingly become subjects of data collection and analysis, with little understanding of how their information is used. Addressing this challenge involves establishing transparent mechanisms for obtaining informed consent, ensuring that individuals are aware of and agree to the ways in which their data is utilized by AI systems.

Bias and Fairness

Algorithmic bias is a critical ethical concern that permeates AI systems, potentially perpetuating and even exacerbating societal inequalities (Abell, 2020, 21–25; Windsor 2022, 45–59). Biases embedded in algorithms can result in discriminatory outcomes, affecting marginalized communities disproportionately. Recognizing and addressing these biases require constant vigilance and a commitment to fairness throughout the AI development lifecycle. Even more, this quest for fairness in AI extends beyond addressing biases. It encompasses the development of machine learning models that provide equitable outcomes for diverse user groups. Achieving fairness involves implementing strategies to mitigate bias, actively seeking diverse perspectives in model development, and fostering a culture of inclusivity within AI research and application.

Accountability and Transparency

The increasing autonomy of AI systems raises challenging questions regarding accountability. When AI systems make decisions or take actions that impact individuals or society, attributing responsibility becomes intricate. Establishing mechanisms to hold AI systems accountable for their actions is a pivotal ethical consideration, necessitating clear guidelines and frameworks that assign responsibility in a coherent manner. In this regard, ensuring transparency in AI decision-making processes can be the cornerstone of ethical AI development. Understanding how AI systems arrive at decisions is crucial for users, regulators, and stakeholders. Lack of transparency not only erodes trust but also hinders the ability to identify and rectify biases or ethical lapses. Ethical AI demands transparency in the decision-making processes, enabling users to comprehend, challenge, and trust the outcomes produced by AI systems.

Ethical Challenges and Their Solutions

To contextualize these and other ethical challenges, it is necessary that the researcher examines real-world instances where AI has presented ethical dilemmas (Stahl et al. 2023). For instance, one such case involves the deployment of facial recognition technology in law enforcement. The widespread use of this technology raises concerns about individual privacy, potential bias against certain demographic groups, and the lack of consent in many instances.

These, and similar challenges are indicative of the profound ethical implications AI development and deployment has on individuals and the society at large. Privacy infringements can erode the trust individuals place in technology, leading to a reluctance to engage with AI systems. Algorithmic bias not only perpetuates societal inequalities but also undermines the goal of creating fair and just technologies. Lack of accountability and transparency can result in a loss of agency for individuals affected by AI decisions, creating a sense of powerlessness and frustration.

All these directly underscore the urgency of developing robust ethical frameworks. Examining ethical challenges provides an opportunity to derive lessons and explore potential solutions. Ethical guidelines and frameworks must evolve alongside technological advancements, incorporating principles that address emerging challenges. Collaboration among researchers, policymakers, industry stakeholders, and the public is essential to create and implement effective solutions. Additionally, integrating ethics education into AI research and development can foster a culture of ethical responsibility among practitioners.

In conclusion, the ethical challenges in artificial intelligence are multifaceted and require a comprehensive approach. Privacy concerns, bias, accountability, and transparency represent critical dimensions that demand ongoing attention and scrutiny. As AI continues to shape our future, a commitment to addressing these challenges ethically is paramount to ensuring the responsible and beneficial integration of artificial intelligence into our societies.

Ethical Guidelines for AI Development

As artificial intelligence becomes increasingly intertwined with our daily lives, the importance of establishing ethical guidelines for its development and deployment cannot be overstated. Although such guidelines may seem superfluous due to the technological nature of their subjects (Etzioni and Etzioni 2017, 403–18), we argue that the opposite is the case. Thus, this section delves into the existing landscape of ethical guidelines, frameworks, and principles in the field of AI. By reviewing current initiatives and proposing a comprehensive ethical framework, we aim to provide guidance for stakeholders involved in the creation and implementation of AI technologies.

A multitude of organizations, both governmental and non-governmental, have recognized the need for ethical considerations in AI. The various overviews of existing ethical guidelines that are available to the researcher (Boddington 2017, 39–58), and studies on these issues coming out of such bodies as the European Commission (Smuha 2019, 97–106), and other international initiatives (Daly et al 2019) allow for an understanding of the diverse perspectives and priorities that inform ethical considerations in AI development. We argue that in developing an ethical framework for AI each of these approaches are relevant. Each offers a unique set of ethical guidelines – for instance, some emphasize transparency, while others prioritize accountability or fairness – and each has strengths and limitations. We posit however that the areas of convergence between these sets of ethical guidelines provide a solid foundation for proposing a comprehensive ethical framework, one that synthesizes the best aspects of existing guidelines. Thus, taking key ethical principles such as transparency, fairness, accountability, and user empowerment as our foundation, we propose a threefold holistic approach to the issue, one that seeks to address the multifaceted nature of ethical considerations in AI.

Firstly, a suitable ethical framework will recognize the evolving nature of technology, emphasizing its dynamic and adaptive character. Such knowledge would necessarily lead to the incorporation of mechanisms for regular updates, ensuring that the ethical framework used remains relevant in the face of emerging issues. The ability to adapt to new ethical considerations and technological advancements is essential for maintaining the effectiveness of ethical guidelines over time (Boddington 2017, 67–84).

Secondly, ethical considerations should be an integral part of the lifecycle of any further AI development. Ethical guidelines cannot be left out or considered to be issues of secondary importance – they are not an afterthought. Therefore, practical strategies should be devised for incorporating ethical considerations at each stage, from the initial design phase to deployment and ongoing monitoring of AI systems. Only by embedding ethics into the development process, a culture of responsible AI development can be created.

Thirdly, since ethical development cannot occur in isolation, the collaboration of the diverse stakeholders – researchers, developers, policymakers, ethicists, and end-users – is crucial (Iphofen and Kritikos 2021,

170–84). The practical implementation of ethical guidelines ought to engage a variety of perspectives, ensuring in this way that the ethical framework used is robust, but also appropriately nuanced, and reflective of diverse societal values. Only in this way the ethical guidelines propose can serve as a compass, guiding the development of AI technologies that align with such values, foster trust, and maximize positive impact while minimizing ethical risks.

Social Impact of Ethical AI

The ethical considerations surrounding artificial intelligence extend beyond individual principles and guidelines to encompass broader societal impacts (Baum 2020, 165–76). Undeniably, there are far-reaching consequences of AI ethical practices on individuals, communities, and the society at large. Such social implications underscore the importance of integrating ethical considerations into AI development for the betterment of society (Liao 2020, 1–42).

There are first positive social contributions of ethical AI to be considered. From improving healthcare outcomes and enhancing educational experiences to optimizing resource allocation and aiding in disaster response, the social benefits of ethical AI are already significant and have the potential to grow in significance, impact, and diversity. The evaluation of such contributions as positive is governed by an assessment of the extent to which ethical AI practices can address constructively societal challenges and improve the overall well-being of humans.

There are also negative consequences of AI implementation, which must be mitigated. Starting with acknowledging that AI technologies can have unintended negative consequences, a holistic ethical framework will take into consideration strategies for mitigating such negative impacts. This may include addressing biases, ensuring privacy protection, and preventing the misuse of AI for malicious purposes – all ethical practices that would play a crucial role in averting harm and minimizing negative societal consequences.

In regard with the above, AI developers and researchers have a significant responsibility in shaping the ethical landscape, from design to deployment, throughout the lifecycle of ethical AI. By prioritizing ethical decision-making, developers and researchers can contribute to the creation of AI technologies that align with societal values and priorities. In this regard, policymakers and regulatory bodies play a pivotal role in shaping the

social impact of AI through the establishment and enforcement of ethical guidelines. Robust policy frameworks that provide a regulatory foundation for ethical AI practices are important, for well-crafted regulations can incentivize responsible behaviour, create accountability, and ensure that AI technologies are developed and deployed in the public interest.

The regulatory action proposed above could be described as mitigating negative social consequences while also maximizing positive impacts. Within this objective, one ought to promote public awareness and engagement. Informed and engaged citizens are critical in holding AI developers, policymakers, and businesses accountable for ethical practices. This may include, but is not limited to, transparent communication, education (Rotaru 2021a, 87-92), and inclusive public dialogue. In this way the public can become involved in decision-making processes, which would ensure that the social impacts of AI become more closely aligned with societal values.

Moreover, businesses, which are key actors in the deployment of technologies, are responsible for meeting specific ethical standards in the development and use of AI. Beyond compliance with regulations, businesses should adopt ethical practices that prioritize the well-being of individuals and communities. This means that ethical considerations are integrated into business strategies, decision-making processes, and corporate cultures.

In conclusion, the social impact of ethical AI practices is profound and far-reaching. Since positive contributions of AI may be overshadowed by negative consequences, a collective commitment to ethical AI development is needed. The engagement of stakeholders, including developers, researchers, policymakers, and the public, is essential in shaping the ethical landscape of AI for the benefit of society. Ethical AI practices are not only a moral imperative but also a strategic investment in creating technologies that contribute positively to the social fabric and uphold the values we hold dear.

Future Directions

As the field of artificial intelligence continues to evolve, so do the ethical concerns that accompany its development and deployment. Before concluding this paper, given the emerging challenges, advancements in technology, and the evolving role of ethics in shaping the trajectory of artificial intelligence, we ought to raise three points pertaining to future research on AI ethics.

Firstly, it is incumbent that research on AI ethics is preoccupied with identifying the moral challenges brought about by emerging technologies – given the relentless pace of technological innovation it is likely that the raise of novel issues that demand ethical scrutiny becomes a common occurrence. We ought to include in this discussion such technologies as quantum computing, advanced robotics, and neuro-inspired AI. Understanding and addressing proactively the ethical issues spanning from the appearance of such technologies is crucial in ensuring that ethical AI practices grow hand in hand with technological advancements. In this regard, it is important that religious scholars also become involved in researching the field of AI ethics (Adriansyah 2023; Coghil 2023, 604–19; Brittain 2020, 84–86; Cormie 2020, 75–77).

Moreover, since AI is a global phenomenon, ethical considerations must be sensitive to diverse cultural norms and values. As such, as AI technologies proliferate worldwide, research ought to acknowledge and address cultural variations in ethical frameworks (Bostrom 2014, 316–34). Nevertheless, this does not minimize the importance of collaborative efforts to develop globally inclusive ethical guidelines if we are to achieve responsible AI development on a global scale.

Secondly, new areas of research and development are strongly coming into view. For instance, enhancing the explainability and interpretability of AI systems is a frontier that demands further research. It is paramount that AI decisions become more understandable to end-users, regulators, and other stakeholders (Harris 2018, 599–609). Thus, advancements in explainable AI contribute not only to transparency but also to user trust and accountability. Also, the intersection of AI and human augmentation presents ethical challenges and opportunities. Further ethical research will necessarily examine the implications of using AI to enhance human capabilities, considering issues related to autonomy, identity, and societal impact. As human-AI integration becomes more prevalent, ethical frameworks must evolve to address the complexities of this transformative relationship.

Thirdly, future research must consider the evolving role of ethics in shaping the future of AI. Here we are dealing with issues of governance and regulation, which are critical components in the shaping of an AI ethical landscape (Altenburger 2023, 1–8). Ethical research ought to inform governance structures and regulatory frameworks. The integration of ethical

principles into policies and laws ensures that AI development aligns with societal values and prioritizes the well-being of individuals and communities. In this regard, fostering a culture of ethical responsibility requires a strong emphasis on education. Therefore, we advocate for the integration of ethics education in AI research and development by instilling ethical considerations early in the training of AI practitioners, academia, and industry. In this way the future generation of professionals will be a generation who prioritizes ethical practices.

In conclusion, the future directions of AI ethics are dynamic and multifaceted. We have identified emerging challenges, suggested areas for further research, and emphasized the evolving role of ethics in governance and education. These provide a guideline along the future trajectory of ethical considerations in the field of artificial intelligence. As AI continues to reshape the world, a commitment to ethical development is essential to harness its potential for positive societal impact while minimizing risks and ensuring the well-being of humanity.

Conclusion

Artificial Intelligence is not merely a technological advancement; it is a transformative force that permeates every aspect of our lives. This paper has journeyed through the intricate landscape of AI ethics, exploring ethical foundations, dissecting challenges, proposing guidelines, and contemplating the social and future implications of ethical AI development.

From the vantage point of ethical theories – utilitarianism, deontology, and virtue ethics – we have sought a nuanced understanding of the moral fabric guiding AI. Ethical challenges, spanning privacy, bias, accountability, and transparency, have been dissected to illuminate the potential pitfalls and demand a principled approach to AI development. It is evident that there are tangible consequences of ethical lapses when it comes to technological development and therefore it is imperative to become proactive in developing specific ethical frameworks.

The proposal we offer, of a comprehensive ethical framework for AI development, provides a roadmap – a synthesis of existing guidelines, dynamic and adaptive, emphasizing transparency, fairness, accountability, and user empowerment. This framework, we contend, is essential to guide developers, policymakers, and stakeholders in navigating the complex ethical

considerations inherent in AI. Moreover, the examination of the social impact of ethical AI practices reinforces the idea that responsible development is not merely a technical matter but a societal imperative. Positive contributions and the mitigation of negative consequences rest on the shoulders of stakeholders – developers, policymakers, businesses, and an informed public. The engagement of diverse perspectives is crucial in crafting ethical guidelines that are robust, fair, and inclusive.

As we look to the future, we identified emerging challenges, from the ethical implications of nascent technologies to the global and cultural dimensions of AI ethics. Areas for further research, such as explainability and the intersection of AI with human augmentation, beckon scholars and practitioners to delve deeper into uncharted ethical territories. The evolving role of ethics in shaping AI governance and the call for ethics education signal a paradigm shift. Governance must not only be regulatory but imbued with ethical principles that reflect societal values. Education, too, is foundational (Rotaru 2021b,190-196), shaping a generation of AI practitioners who are not only technically adept but ethically responsible. In closing, the ethical considerations in AI are not static; they evolve with technology, societal needs, and our collective understanding of morality. As we embark on this journey into the future, the compass guiding us must be principled, adaptable, and aligned with the values we hold dear. A commitment to ethical AI is not a constraint; it is the key to unlocking the true potential of artificial intelligence for the betterment of humanity (Rotaru 2016, 29-43).

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