



IGWEBUIKE: An African Journal of Arts and Humanities

Vol. 11. No. 1, (2025)

ISSN: 2488- 9210 (Print) 2504-9038 (Online)

Dept of Philosophy and Religious Studies, Tansian University
Umunya

Indexed: Academic Journals Online, Google Scholar, Igwebuike Research Institute

NAVIGATING THE ETHICAL LANDSCAPE OF ARTIFICIAL INTELLIGENCE: ACCOUNTABILITY, BIAS, AND HUMAN-CENTRIC DESIGN

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Abstract

This research explores the ethical dimensions of artificial intelligence (AI) through the lenses of accountability, bias, and human-centric design. As AI technologies increasingly influence critical decision-making in various sectors, understanding who bears moral responsibility for AI-driven outcomes becomes paramount. This study evaluates existing accountability frameworks and proposes enhancements to ensure ethical responsibility in AI deployment. Furthermore, it addresses the pervasive issue of bias in AI algorithms, examining methodologies for identifying and mitigating biases to promote fairness and equity. Finally, the research emphasizes the principles of human-centric design, advocating for the development of AI systems that prioritize human values and welfare. By integrating these themes, this study aims to contribute to the discourse on responsible AI development, providing actionable insights for policymakers, technologists, and ethicists in creating equitable and trustworthy AI systems.

Keywords: Artificial Intelligence, Accountability, Bias, Ethical, Human-centric and Design

Introductions

The rapid advancement of artificial intelligence (AI) technologies has transformed numerous sectors, including healthcare, finance, and transportation, offering unprecedented opportunities for efficiency and innovation. However, these advancements have also raised significant ethical concerns that necessitate careful examination. This study focuses on three critical areas: accountability, bias, and human-centric design, which are essential for navigating the ethical landscape of AI.

As AI systems increasingly make decisions that affect human lives, the question of accountability becomes paramount. Traditional frameworks of accountability may not adequately address the complexities introduced by AI, particularly when decisions are made autonomously by algorithms. Scholars argue that establishing clear lines of accountability is crucial to ensure that developers, organizations, and users are responsible for the outcomes of AI systems (<https://alchemy.works.com>, 2024). This includes understanding who is liable when AI systems cause harm or perpetuate bias, which is a growing concern in sectors such as criminal justice and



healthcare (<https://www.linkedin.com>, 2024). Bias in AI systems is a pervasive issue that can lead to discriminatory outcomes, particularly when algorithms are trained on historical data that reflect societal inequalities. Research indicates that AI can inadvertently perpetuate and even exacerbate existing biases, leading to unfair treatment in areas such as hiring, lending, and law enforcement (<https://pmc.ncbi.nlm.nih.gov/article>, 2024). Addressing algorithmic bias requires robust data collection practices, diverse representation in AI development teams, and ongoing monitoring to ensure equitable outcomes. The ethical implications of biased AI systems highlight the need for transparency and fairness in algorithmic decision-making processes. Human-Centric Design-centric design principles emphasize the importance of prioritizing human values and needs in the development of AI systems. This approach advocates for the involvement of diverse stakeholders, including end-users, in the design process to ensure that AI technologies are accessible, inclusive, and beneficial to all. By focusing on human welfare, designers can create AI systems that enhance decision-making capabilities while minimizing risks associated with automation and algorithmic decision-making. The integration of human-centric design in AI development is essential for fostering trust and ensuring that technologies align with societal values.

Navigating the ethical landscape of artificial intelligence requires a comprehensive understanding of accountability, bias, and human-centric design. By addressing these critical areas, this study aims to contribute to the ongoing discourse on ethical AI development, providing insights that can inform policymakers, technologists, and ethicists in creating responsible and equitable AI systems.

Artificial intelligence

Artificial intelligence (AI) refers to the capability of machines and computer systems to perform tasks that typically require human intelligence. These tasks include learning, reasoning, problem-solving, perception, language understanding, and decision-making. AI systems can analyze data, recognize patterns, and make predictions based on the information they process. The technology encompasses various subfields, including machine learning, natural language processing, and robotics, among others (<https://www.ibm.com>, 2024).

In the context of this write up "artificial intelligence and Lockean epistemology," AI raises significant questions about the nature of knowledge and how it is acquired. John Locke's epistemology emphasizes that knowledge is derived from sensory experience and that the mind is a blank slate at birth, shaped by interactions with the world (<https://projectqsydney.com>, 2024). This empirical approach contrasts with how AI systems generate knowledge, which is primarily through data processing rather than sensory experience.

Accountability in AI

Accountability in artificial intelligence (AI) is a critical issue as AI systems increasingly influence decision-making across various sectors, including healthcare, finance, and law enforcement. The complexity of AI technologies, particularly their "black box" nature, complicates the assignment of responsibility when these systems produce harmful or biased outcomes. Accountability in artificial intelligence, addresses some key issues which include:



19. Responsibility and Liability:

One of the foremost challenges in AI accountability is determining who is responsible when an AI system causes harm. Traditional accountability models, which typically assign responsibility from executives to managers, struggle to adapt to the decentralized and automated nature of AI systems. This raises questions about whether developers, users, or organizations should be held liable for the actions of AI (<https://cmr.berkeley.edu.com>, 2024). For instance, in the case of autonomous vehicles, if an accident occurs, it is unclear whether the manufacturer, the software developer, or the vehicle owner bears responsibility (2024).

20. Transparency:

The "black box" nature of many AI systems makes it difficult to understand how decisions are made. This lack of transparency can obscure the decision-making processes, making it challenging to hold anyone accountable for adverse outcomes. Stakeholders, including users and affected individuals, often lack the means to interrogate AI systems effectively (2024). Transparency is essential for accountability, as it allows for scrutiny of AI outcomes and helps identify the sources of errors or biases in decision-making (Novelli, 2024).

21. Regulatory Frameworks:

As AI technologies evolve, there is a pressing need for regulatory frameworks that establish clear guidelines for accountability. Current regulations often lag behind technological advancements, leading to gaps in accountability mechanisms (Novelli, 2024). The European Union's proposed AI Act aims to create a risk-based regulatory framework that holds AI providers accountable based on the level of risk their systems pose to individuals and society. This approach emphasizes the need for compliance, oversight, and enforcement to ensure responsible AI deployment.

22. Shared Accountability:

Some experts advocate for a model of shared accountability, where multiple stakeholders including developers, users, and organizations are collectively responsible for the outcomes of AI systems. This approach recognizes that accountability in AI is multifaceted and cannot be assigned to a single party (<https://cmr.berkeley.edu.com>, 2024). Shared accountability can help distribute responsibility more equitably, but it also complicates the identification of specific failures and the implementation of corrective measures (2024).

23. Ethical Oversight:

Establishing ethical oversight mechanisms, such as independent audits and oversight committees, can enhance accountability in AI. These bodies can monitor AI systems' performance, ensure compliance with ethical standards, and intervene when necessary (2024).

Ethical oversight is particularly important in high-stakes areas like healthcare and criminal justice, where AI decisions can significantly impact individuals' lives (Novelli, 2024)

24. Explainable AI (XAI):



The development of Explainable AI (XAI) is a crucial step toward improving accountability. XAI aims to make AI decision-making processes more transparent and understandable to users and stakeholders, thereby facilitating accountability (Novelli, 2024). By providing clear explanations for AI decisions, organizations can better address concerns about bias and errors, fostering trust and accountability in AI systems (Novelli, 2024)

Accountability in AI is a multifaceted issue that requires careful consideration of responsibility, transparency, regulatory frameworks, and ethical oversight. As AI technologies continue to advance, establishing robust accountability mechanisms will be essential to ensure that these systems operate fairly and ethically.

Bias in AI

Bias in artificial intelligence (AI) refers to the systematic and unfair discrimination that can arise from the data, algorithms, and design choices used in AI systems. As AI technologies become more prevalent in decision-making processes across various sectors, understanding and addressing bias is crucial to ensure fairness and equity.

AI systems learn from training data, and if this data is unrepresentative or reflects historical prejudices, the AI will likely produce biased outcomes. For example, facial recognition systems have been shown to misidentify individuals with darker skin tones due to a lack of diverse training data (<https://www.ibm.com>, 2024). Data bias can also stem from sampling issues, where certain groups are overrepresented or underrepresented in the datasets used to train AI models. This can lead to skewed results that do not accurately reflect the broader population.

i. Algorithmic Bias:

The algorithms themselves can introduce bias based on how they are designed and the features they prioritize. For instance, if an algorithm is programmed to weigh certain characteristics more heavily, it may inadvertently discriminate against specific demographic groups. Algorithmic bias can also occur due to programming errors or the unconscious biases of developers, which can influence how data is processed and interpreted. Human biases can manifest in AI systems through the choices made during data collection, labeling, and model training. Developers may unconsciously favor certain datasets or perspectives, leading to biased outcomes (<https://cte.ku.edu.com>, 2024) Cognitive biases, such as confirmation bias, can also affect how AI systems are trained and evaluated, reinforcing existing stereotypes and prejudices (2024).

ii. Cultural and Societal Bias:

AI systems often reflect the cultural and societal contexts in which they are developed. For example, generative AI models trained on predominantly Western datasets may produce outputs that reflect Western values and norms, potentially marginalizing other perspectives. This cultural bias can lead to AI systems that do not adequately serve diverse populations, resulting in inequitable access to services and opportunities (<https://cte.ku.edu.com>, 2024).

iii. Confirmation Bias:



AI systems can reinforce flawed ideas or biases by providing only the views or representations that users expect. This can create echo chambers where users are only exposed to information that aligns with their existing beliefs, further entrenching biases. The tendency of AI to confirm existing biases can be particularly problematic in areas like news dissemination and social media, where algorithmic recommendations shape public discourse (<https://cte.ku.edu.com>, 2024).

iv. Mitigation Strategies:

To address bias in AI, organizations can implement several strategies, which includes among others; Ensuring that training data is diverse and representative of the population can help reduce bias, conducting regular assessments of AI systems for biased outcomes can help identify and rectify issues promptly. Building diverse teams of developers can bring various perspectives to the design process, reducing the likelihood of bias. Developing AI systems that provide clear explanations for their decisions can enhance transparency and accountability, making it easier to identify and address biases (<https://cte.ku.edu.com>, 2024).

Bias in AI is a multifaceted issue that requires ongoing attention and proactive management. By understanding the sources of bias and implementing effective mitigation strategies, organizations can work towards creating fairer and more equitable AI systems.

Human-Centric Design

Human-Centric Design (HCD) is an approach that prioritizes the needs, behaviors, and experiences of users throughout the design process. It aims to create solutions that are not only functional but also resonate with users on a personal level. Despite its well-intentioned philosophy, HCD faces several key issues that can undermine its effectiveness. Some of the components of human-centric design include;

vi. Business Prioritization Over User Needs:

One of the most significant challenges in HCD is the tendency for business goals to overshadow user-centered objectives. Companies often prioritize profit-driven decisions, such as implementing intrusive advertising or compromising user privacy for data monetization, which can lead to user dissatisfaction and mistrust (Julian, 2024). This misalignment raises questions about the true commitment to HCD principles within organizations.

vii. Superficial Application:

Critics argue that HCD is sometimes applied superficially, focusing on creating aesthetically pleasing designs without addressing deeper user needs or systemic issues. This can result in solutions that are user-friendly but fail to solve meaningful problems or consider broader societal impacts (<https://marvelapp.com>, 2024). The emphasis on user experience can lead to a neglect of strategic considerations, such as sustainability and scalability.

viii. Lack of Inclusivity:



HCD processes can inadvertently exclude marginalized groups if the design teams lack diversity or fail to engage with a wide range of users. This can result in products that do not meet the needs of all potential users, perpetuating existing inequalities (Jussi, 2021). Ensuring inclusivity in the design process is crucial for creating equitable solutions.

ix. Anthropocentrism:

HCD is often criticized for its anthropocentric focus, which prioritizes human needs at the expense of environmental and societal considerations. This perspective can lead to designs that contribute to ecological degradation or social injustice, as the broader impacts of design decisions are overlooked (Jussi, 2021). A shift towards more holistic design approaches that consider the interconnectedness of all life is necessary.

v. UX Patterns:

The rise of "dark UX" patterns design strategies that manipulate users into making decisions that may not be in their best interest poses a significant ethical challenge for HCD. These practices exploit cognitive biases to maximize engagement and profit, often at the expense of user autonomy and well-being (Julian, 2024). This contradiction undermines the foundational principles of HCD.

vi. Need for Systemic Change:

Many critiques of HCD emphasize the need for a systemic approach that goes beyond individual user experiences to address larger societal and environmental issues. This includes considering the implications of design decisions on communities and ecosystems, rather than focusing solely on user satisfaction (<https://marvelapp.com>, 2024). A more integrated approach can lead to solutions that are not only user-friendly but also socially and environmentally responsible.

Human-Centric Design holds great potential for creating meaningful and impactful solutions, but it must navigate significant challenges to fulfill its promise. By addressing issues such as business prioritization, superficial application, inclusivity, anthropocentrism, dark UX patterns, and the need for systemic change, designers can work towards a more ethical and effective practice that truly centers on human needs and broader societal impacts.

Evaluating The Ethical Landscape of Artificial Intelligence: Accountability, Bias, And Human-Centric Design

Evaluating the ethical landscape of artificial intelligence (AI) through the lens of ethics involves a critical examination of three key areas: accountability, bias, and human-centric design. Each of these areas presents unique ethical challenges and opportunities for fostering responsible AI development and deployment. Effective accountability mechanisms are essential in AI to ensure that developers and organizations are held responsible for the decisions made by AI systems. The ethical implications of accountability extend beyond legal liability; they encompass moral obligations to stakeholders affected by AI outcomes. Establishing robust governance frameworks that include transparency, documentation, and oversight is vital. These frameworks help build trust in AI technologies, ensuring that stakeholders can hold parties accountable in cases of harm or



bias. Bias in AI is a critical ethical concern, as it can lead to unfair treatment of individuals or groups, particularly marginalized populations. Bias can be introduced at various stages of the AI life cycle, including data collection, model training, and deployment. For instance, machine learning models trained on biased datasets can perpetuate existing inequalities, resulting in discriminatory outcomes. To address this issue, it is crucial to implement bias auditing tools that can identify and mitigate biases throughout the AI development process. These tools utilize statistical and computational methods to ensure that AI systems are fair and equitable, thereby aligning with ethical principles of justice and fairness.

Moreover, involving diverse stakeholders in the AI development process is vital for recognizing and addressing potential biases. Engaging individuals from various backgrounds can help ensure that AI systems are designed to meet the needs of a broad range of users, thereby promoting inclusivity and equity. Human-Centric Design-centric design (HCD) emphasizes the importance of placing users at the center of AI development. This approach aims to create AI technologies that are not only effective but also accessible and beneficial to all users. By prioritizing the needs and experiences of individuals, HCD can help mitigate biases and enhance the overall user experience. Implementing HCD principles requires collaboration among multidisciplinary teams, including ethicists, social scientists, and community members. This collaborative approach ensures that AI systems are developed with a focus on societal benefits and ethical standards, ultimately leading to more transparent and accountable AI technologies.

Navigating the ethical landscape of AI necessitates a comprehensive approach that integrates accountability, bias mitigation, and human-centric design. By fostering transparency and inclusivity in AI development, stakeholders can work towards creating technologies that not only advance innovation but also uphold ethical standards and promote social equity.

Conclusion

Navigating the ethical landscape of artificial intelligence is a critical endeavor that requires a comprehensive understanding of accountability, bias, and human-centric design. The ethical implications of these components underscore the importance of responsible AI development that prioritizes transparency, fairness, and user-centered approaches.

To effectively address these ethical challenges, stakeholders must engage in ongoing dialogue and collaboration, integrating diverse perspectives and expertise throughout the AI lifecycle. By establishing robust accountability frameworks, actively mitigating bias, and embracing human-centric design principles, the AI community can work towards creating technologies that not only drive innovation but also promote social equity and ethical integrity. Ultimately, fostering an ethical AI landscape is essential for ensuring that these powerful technologies benefit all members of society, paving the way for a more just and inclusive future.

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