



CHAPTER 27

**RESPONSIBLE AI: TRANSFORMING CLIMATE
ACTION IN INTERNATIONAL RELATIONS**

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Abstract

As AI technologies advance, their application in data analysis, predictive modeling, and strategic decision-making becomes increasingly integral to developing innovative solutions to combat the environmental challenges of our time. This narrative explores the pivotal role of responsible AI in the mitigation of the climate crisis, emphasizing the critical need for ethical, equitable, and effective AI implementations within the sphere of international relations. Central to this discourse is the concept of responsible AI or AI ethics, which advocates for the infusion of ethical principles and humanistic values throughout the lifecycle of AI technologies—from their inception and development to their deployment and operational use. The ethos of responsible AI is particularly salient in the context of climate change, where it underpins the operational integrity of AI applications, ensuring they are governed by ethical standards that emphasize data security, privacy, fairness, and environmental stewardship. In the realm of Ethical and Fair Decision- Responsible AI champions the principle of Inclusion of Diverse Perspectives, advocating for the active participation of varied societal segments and expert groups in the AI development process. This inclusivity enriches the decision-making landscape, engendering a more comprehensive and participatory approach to climate action. For AI to exert a substantive and positive impact on the climate crisis, it is imperative that policymakers, developers, and other stakeholders collectively embrace and actualize the principles of responsible AI. The study underscores the transformative potential of artificial intelligence (AI) in addressing the global climate crisis through a strategic examination of national legislation, international environmental treaties, and the analytical prowess of AI in processing climate data. It highlights the imperative of embedding ethical and responsible AI practices within the framework of existing and forthcoming climate-related legal instruments. This compact methodology focuses on dissecting how national laws and international agreements are increasingly integrating AI to bolster climate action, ensuring these innovations for a unified global response to the climate challenge. The ethical framework proffered by responsible AI furnishes a robust foundation for climate-related policymaking, alleviating the cognitive and ethical load on decision-makers. This framework encourages the formulation of policies that are not merely technologically innovative but also socially conscientious and ecologically responsible. In sum, the integration of AI into climate crisis resolution, guided by the principles of responsibility, ethics, and inclusivity, heralds a promising avenue for fostering global environmental sustainability and enhancing international cooperation in the face of one of the most daunting challenges of our time.

Keywords

Responsible AI, AI Ethics, Climate Crisis Management, International Environment Treaties, AI in Climate Action, Sustainability and AI

Introduction

Ethics, as a fundamental branch of philosophy, delves into the study of moral principles and values, guiding individuals and societies on matters of proper conduct. In contrast, AI ethics specifically pertains to the ethical considerations surrounding the development, implementation, and impact of Artificial Intelligence technologies. In the 21st century, philosophy has evolved to be more multidisciplinary, recognizing the connections between different fields of study. This shift is a response to the complex issues we face today, including environmental concerns. The challenges we encounter now require a more diverse and complex approach to finding solutions in international arena.

Artificial Intelligence has emerged as a pivotal force in addressing global challenges such as climate change, environmental sustainability, and international cooperation. The infusion of AI ethics, transparency, and accountability into AI systems is crucial for ensuring that these technologies benefit all of humanity while minimizing potential harms. This paper delves into how ethical, responsible, explainable, and accountable AI can transform climate action and international relations, ensuring that AI-driven decisions are made transparently, fairly, and with a sense of global responsibility.

Ethical AI in Climate Change and International Relations

Moral Theories and Ethical Frameworks

The advancement of AI technologies raises a variety of ethical concerns closely connected to moral theories and frameworks. Discussions on AI ethics often focus on translating ethical principles into technology, revealing the gap between theory and practical implementation. This challenge emphasizes the need to not only recognize but also effectively incorporate ethical aspects into AI systems. Various philosophical stances exist regarding AI's moral responsibility, with some asserting that machines lack the essential elements for moral agency, such as emotions, mental states, and free will, implying that moral decision-making should remain within human domain. On the other hand, some argue that machines could potentially exhibit a unique form of moral agency, separate from human morality, if they showcase autonomy, moral intentions, and a sense of responsibility towards other moral entities. This discussion also delves into the concept of moral patienthood, raising questions about how AI entities should be ethically treated and whether showing empathy towards them is justifiable. Ultimately, ethical frameworks guiding AI development must navigate these intricate philosophical terrains, ensuring that AI systems are created and implemented in a way that reflects human values and ethical norms, all while considering the practical consequences of attributing moral agency or patienthood to AI (Coeckelbergh, 2021)

Applied ethics, as a practical application of ethical theories, involves the utilization of ethical frameworks to address real-world ethical dilemmas across various domains. It encompasses the ethical analysis and resolution of specific challenges in fields such as healthcare, technology, business, and environmental sustainability. While ethics serves as the overarching foundation for moral decision-making, applied ethics provides a specialized lens through which ethical principles are contextualized and operationalized in specific situations. These distinctions highlight the nuanced approaches within the ethical discourse, delineating the broader ethical considerations from the targeted applications of ethical principles in addressing complex ethical issues, including those arising in the realm of artificial intelligence. Responsible AI extends this focus by emphasizing the need for ethical and accountable practices in AI design and deployment, prioritizing fairness, transparency, and the well-being of individuals. Sustainable AI further broadens this perspective by incorporating environmental and social sustainability concerns, advocating for the development of AI technologies that not only adhere to ethical principles but also contribute to long-term sustainability goals. Explainable AI (XAI) refers to the development of artificial intelligence systems that are capable of providing understandable explanations of their decisions and actions to human users. The goal of XAI is to enhance transparency and trust in AI systems by making their inner workings interpretable and comprehensible to humans, particularly to non-experts.

A structured set of principles that directs the development, implementation, and utilization of artificial intelligence systems in accordance with societal values and norms forms the basis of an ethical framework for responsible AI. Floridi's proposed unified framework consists of five core principles: beneficence, non-maleficence, autonomy, justice, and explicability. These principles are crucial for ensuring that AI systems contribute positively to society while minimizing harm and upholding fairness and transparency (Floridi & Cowl, 2019).

The framework emphasizes the importance of designing AI systems to promote the well-being of individuals (beneficence) and to avoid causing harm (non-maleficence). It also highlights the significance of respecting individuals' autonomy and ensuring that AI systems operate in a just and fair manner. Explicability, as a new principle, underscores the need for transparency and accountability in AI systems, addressing questions about how they work and who is responsible for their outcomes.

This ethical framework serves as a foundational structure for the development of laws, regulations, technical standards, and best practices in various sectors and industries. It can facilitate the ethical deployment of AI technologies to support initiatives such as meeting the United Nations Sustainable Development Goals and regulating AI in contexts like online crime and cyberwarfare. By providing a comprehensive overview of ethical principles for AI, this framework enables the transition from good principles to good practices, ensuring that AI technology contributes positively to society.

In conclusion, a robust ethical framework for responsible AI, as proposed by Floridi, is essential for guiding the development and deployment of AI systems in an ethical and responsible manner. By incorporating principles such as beneficence, non-maleficence, autonomy, justice, and explicability, this framework lays the groundwork for ensuring that AI technologies are developed and utilized in a way that aligns with ethical values and societal well-being.

Responsibility in Technological Innovation: Debates on Human Agency and AI Autonomy

Discussions on responsibility in technological advancement revolve around deliberations on human control and AI autonomy, centering on the allocation of decision-making authority between humans and artificial intelligence (AI) systems. With the increasing sophistication and independence of AI, inquiries emerge concerning the individuals or entities accountable for the actions and choices executed by AI systems.

Human agency denotes the ability of individuals to act autonomously and decide based on their own will. In the realm of AI, human agency faces obstacles as people transfer decision-making authority to AI systems, potentially reducing their autonomy. This prompts questions about the level of control humans should maintain over AI systems and their decision-making processes.

On the other hand, AI autonomy refers to the ability of AI systems to make decisions and take actions without direct human intervention. As AI systems become more autonomous, the issue of responsibility becomes more complex. Who bears responsibility when AI systems commit errors or partake in unethical conduct?

Discussions concerning human agency and AI autonomy in technological advancement frequently center on striking a balance between empowering AI systems for efficient operation and guaranteeing that humans maintain ultimate control and accountability. Ethical frameworks and guidelines, such as those outlined in various documents like the EU AI Act, the Beijing AI Principles, and the Rome Call for an AI Ethics, emphasize the importance of promoting human autonomy while also recognizing the need to address the ethical implications of AI autonomy.

Ultimately, discussions on responsibility in technological innovation aim to establish clear guidelines and mechanisms for ensuring accountability, transparency, and ethical behavior in the development and deployment of AI systems. By engaging in these discussions, stakeholders can collaborate towards establishing a responsible and ethical structure for incorporating AI technology into society.

Ethical AI is defined as the development and implementation of AI technologies in a manner that respects human rights and values. In the context of climate change, ethical AI ensures that AI technologies used in environmental monitoring and climate modeling respect both human and ecological rights. For example, AI systems designed to optimize resource use in industrial applications must not only aim for efficiency but also consider the environmental and social impacts of their deployment (Curmally, 2022). The importance of ethical AI in international relations is equally profound, influencing the formulation of global standards and guidelines that ensure AI technologies are used safely and equitably across nations. Two major topics about ethical AI can be the privacy/consent and the bias/fairness.

- **Privacy and Consent:** Ethical AI emphasizes the protection of individual privacy and the necessity of obtaining informed consent before data collection and sharing. In cross-border contexts, this means adhering to the stringent privacy laws of all involved jurisdictions, such as the GDPR in the European Union, which sets a high standard for privacy and data protection.
- **Bias and Fairness:** Ethical AI also requires active measures to prevent biases in AI algorithms that can perpetuate discrimination or inequity, especially important when data from diverse populations are pooled from different countries. Ensuring fairness in AI systems involves careful design and regular audits to detect and mitigate biases, which might affect certain groups disproportionately.

AI ethics influence international policy-making significantly, shaping how countries approach the development and deployment of artificial intelligence technologies in a globally interconnected landscape. For example, AI ethics impact international policies, accompanied by examples from recent international discussions and agreements, such as the development of global standards and guidelines.

AI ethics help in forming global standards that ensure the safe, equitable, and beneficial use of AI across nations. These standards often aim to address issues like privacy, security, fairness, and accountability. For example, the OECD Principles on Artificial Intelligence, adopted by over 40 countries, outline five value-based principles for the responsible stewardship of trustworthy AI. These principles emphasize AI systems' respect for human rights, democratic values, and diversity, and they promote transparency and accountability (Yeung, 2020).

Enhancing Cooperation on AI Safety, Governance and Warfare

AI ethics are pivotal in fostering international cooperation. Countries and international organizations collaborate to establish common frameworks that manage AI's global implications, focusing on ensuring that AI technologies support international welfare and security.

The G7 AI Pact (2021) emphasized the importance of upholding human-centric AI values and agreed on coordinating efforts to promote the use of AI for public good, manage risks associated with AI deployment, and maintain human oversight.

The ethical implications of AI in military applications are a major concern in international relations. There is ongoing debate and policy development aimed at controlling autonomous weapons systems and ensuring they comply with international humanitarian laws.

United Nations discussions on Lethal Autonomous Weapons Systems (LAWS, 2024) have been influenced by AI ethics, focusing on the need for meaningful human control over critical functions of weapon systems to prevent unlawful harm and ensure accountability.

Socio-Economic Inequalities, Technology Transfer and Capacity Building

AI ethics guide international policies toward mitigating the socio-economic inequalities exacerbated by AI, particularly concerning data biases and their impacts on marginalized groups.

The European Union's Artificial Intelligence Act (2024) is an effort to regulate AI applications based on their risk levels, ensuring that AI systems do not deepen existing inequalities or introduce new forms of discrimination.

AI ethics also drive international efforts to ensure equitable access to AI technologies. This includes technology transfer, capacity building, and funding in AI ethics research, especially in developing countries.

The AI for Good Global Summit (2024), hosted annually by the ITU (International Telecommunication Union), is an initiative that brings together stakeholders from around the world to leverage AI to achieve the United Nations Sustainable Development Goals, ensuring inclusive benefits from AI advancements.

The Role of Responsible AI

Defining Responsible AI: Ethical Principles and Considerations

Responsible AI encompasses the ethical principles and considerations that guide the development and deployment of artificial intelligence technologies with a focus on promoting social good and sustainable development. It involves ensuring that AI applications align with ethical values, social impact, and environmental sustainability (Mazzi & Floridi, 2023). One crucial aspect of responsible AI is addressing algorithmic bias and fairness. The awareness of biases in AI systems has led to a focus on ensuring fairness in algorithmic decision-making processes. Biases in datasets used to train AI models can perpetuate discrimination and lead to unfair outcomes, emphasizing the importance of mitigating bias in AI applications. Another critical consideration in responsible AI is the importance of data quality. The timeliness, completeness, and correctness of datasets significantly impact the reliability and outcomes of AI systems. Responsible AI also involves promoting transparency and accountability in AI systems. Ensuring that AI technologies are explainable and that developers are accountable for the decisions made by AI systems is essential for building trust and addressing concerns related to AI ethics.

Moreover, responsible AI encompasses the promotion of user privacy and autonomy. Safeguarding informational privacy and ensuring that individuals have control over their data and interactions with AI systems are fundamental ethical considerations in AI development. In conclusion, responsible AI integrates ethical principles, social impact considerations, fairness, transparency, data quality, privacy protection, and accountability into the design and implementation of AI technologies. By adhering to these principles, developers and stakeholders can harness the full potential of AI for social good while mitigating potential risks and ethical concerns.

The Importance of Transparency and Accountability in AI Systems

Transparency and accountability are essential in AI systems to ensure ethical and responsible practices. Transparency involves making the processes, decisions, and outcomes of AI systems understandable and explainable to stakeholders (Floridi, 2023). By providing transparency, developers can build trust with users and regulators, enabling them to comprehend how AI systems work and the rationale behind their decisions. Accountability in AI systems entails holding developers and organizations responsible for the impacts of AI technologies. This includes being answerable for the decisions made by AI systems and the consequences of those decisions on individuals and society. Accountability mechanisms help ensure that AI systems are used ethically and in alignment with societal values and norms. Transparency and accountability play a crucial role in addressing issues such as algorithmic bias and fairness in AI systems. By being transparent about the data used to train AI models and the algorithms' decision-making processes, developers can identify and mitigate biases that may lead to unfair outcomes. Accountability mechanisms also help ensure that biases are addressed and that AI systems operate in a fair and unbiased manner. Moreover, transparency and accountability are essential for promoting user privacy and autonomy in AI systems. By being transparent about data collection and usage practices, organizations can empower individuals to make informed decisions about sharing their data with AI systems. Accountability mechanisms also ensure that user data is handled responsibly and in compliance with privacy regulations. In conclusion, transparency and accountability are critical pillars of responsible AI. By promoting transparency and accountability in AI systems, developers can build trust, address biases, protect user privacy, and ensure that AI technologies are used ethically and for the benefit of society.

The Role of Explainable AI

Explainable AI refers to technologies that provide clear, understandable explanations for decisions made by AI systems. This transparency is essential for building trust among international partners and stakeholders, particularly in sensitive areas like climate change where AI-driven decisions can have significant repercussions. For instance, AI applications in climate modeling must be able to explain their predictions and the underlying data used, enabling policymakers to make informed decisions about climate adaptation strategies (Labe, 2021). Below the topic of explainable AI, two major issues can be the transparency and the regulatory compliance.

Transparency: Explainable AI necessitates that AI systems be transparent about how decisions are made, particularly when these decisions affect individuals from different countries. This transparency is vital for building trust among international partners and stakeholders.

Regulatory Compliance: Explainable AI can help entities demonstrate compliance with international regulations by making it easier to understand and explain decisions to regulatory bodies. This is especially critical in heavily regulated sectors like finance and healthcare, where AI systems must justify their decisions across different legal frameworks.

Accountable AI in International Policy and Agreements

Accountable AI ensures that there are mechanisms in place to hold AI systems and their operators responsible for the outcomes of AI actions. This includes comprehensive auditing processes and adherence to international standards, critical for maintaining trust and cooperation in international frameworks. AI systems used in cross-border environmental monitoring (Aaronson, 2019) must have clear accountability structures to ensure compliance with international environmental laws, economy and agreements (Maupin, 2017). The two major issues about the accountable AI can be the responsibility and the auditability.

Responsibility: Accountable AI ensures that there is clarity about who is responsible for AI behavior, especially in scenarios where AI systems operate across borders. This helps in addressing issues like error and misuse, ensuring that there are mechanisms in place to handle such situations legally and ethically.

Auditability: Accountable AI involves keeping detailed logs and documentation to trace AI decisions back to their origins. This is crucial for cross-border collaborations where accountability standards might differ. Auditing allows for the review and verification of AI actions, facilitating regulatory checks and balances.

Also, about the cross-border and data sharing might bring up the below issues:

Enhanced Trust: Ethical, explainable, and accountable AI practices build trust among countries and organizations, making them more willing to share data and collaborate on AI projects.

Improved Innovation and Research: With robust ethical frameworks, countries can collaborate more freely and innovate without fear of violating ethical norms, which can accelerate advancements in AI and other technological fields.

Risk Management: By adhering to these AI principles, entities can better manage risks related to privacy breaches, biased outcomes, or other ethical failings, which might otherwise lead to significant legal and reputational costs.

Standardization: These principles encourage the development of standardized approaches to AI ethics that are applicable across different regulatory environments, simplifying the process of cross-border collaborations.

AI's Impact on Climate Change Mitigation and Adaptation

AI supports effective climate mitigation strategies by optimizing energy consumption and integrating renewable energy sources more efficiently into the power grid. Furthermore, AI aids in climate adaptation by enhancing the predictive accuracy of climate models, allowing for better preparedness

against climate-related disasters. Ensuring these AI systems are designed with fairness and inclusivity in mind is vital to prevent them from exacerbating existing social inequalities (King, 2021).

Mitigation refers to efforts to reduce or prevent the emission of greenhouse gases. AI can support these strategies through energy efficiency, renewable energy integration or carbon capture and storage (CCS).

AI can optimize energy use in various sectors, including residential, industrial, and transportation (Ahmad et al., 2021). For instance, AI can enhance the efficiency of electrical grids using smart grid technologies, reducing emissions and energy waste (Mehmood, 2019).

AI algorithms help integrate renewable energy sources into the power grid more effectively. This includes managing variable outputs from wind and solar energy sources, predicting energy demand, and storing excess energy (Omitaomu, 2021).

AI can improve the efficiency and cost-effectiveness of CCS technologies. Through predictive maintenance and process optimization, AI enhances the viability of capturing carbon from the atmosphere and storing it safely (Priya, 2023).

Monitoring Environmental Compliance with AI

AI significantly enhances the capability to monitor environmental compliance and enforce laws globally (Denney, 2022). Through advanced data analysis and predictive modeling, AI technologies can detect potential violations and predict areas of environmental risk, facilitating more proactive governance and compliance enforcement (Miasayedava, 2022). These AI systems can also automate the reporting and alerting processes, increasing the efficiency and timeliness of responses to environmental threats.

Influence of AI on Global Transformation

AI is driving global economic shifts towards sustainable practices by enabling smarter resource management and fostering innovations that reduce environmental impact. The social and cultural implications of AI are profound, as it has the potential to reshape societal norms and practices around technology use, privacy, and environmental responsibility (Dauvergne, 2022).

Ethics, Governance, and Power

Philosophical Perspectives on AI Governance

Philosophical reflections on AI governance involve examining the ethical principles guiding the responsible development and deployment of artificial intelligence technologies. This includes considerations of transparency, accountability, and stakeholder engagement to ensure that AI systems align with ethical standards and societal values. Conversations regarding regulatory structures and decision-making procedures strive to tackle ethical issues, safeguard privacy, and reduce potential risks linked to AI, underscoring the responsibilities of governments, businesses, scholars, and the community in molding AI regulations.

Technological hegemony in the context of AI raises questions about power dynamics, ethical implications, and social impact resulting from the widespread influence and dominance of AI technologies (Coeckelbergh, 2022). Analysis of power structures, control mechanisms, and ethical considerations surrounding technological dominance highlights concerns about equity, autonomy, and the ethical use of AI in a society shaped by technological hegemony. An example of a negative outcome of this situation is revealed by French philosopher Bernard Stiegler. He argues that the automation of information leads to cognitive entropy by automating decision-making mechanisms, resulting in impulsive purchase decisions made in advance without awareness. This phenomenon creates an instinctual reason for purchasing, highlighting the entropic tendency in artificial intelligence and information. In the Anthropocene era, the automation of information through big data and AI applications reduces cause and effect to correlation, emphasizing the significance of consumer behavior in the philosophy of technology.

The loss of attention, memory recall, and future planning due to the economy of attention hinders citizens reduced to consumers from challenging the new liberal system. The manipulation of decision-making as a technology of persuasion extends to social relations and politics, with cognitive capitalism exerting power invisibly through instinct and emotional conditioning. Information manipulation supersedes symbolic production, homogenizing individuals in closed systems, where differences are equated through calculations serving deceptive orders.

Stiegler emphasizes that knowledge emerges from transindividual, interpersonal, and intergenerational relationships, transmitted and experienced through externalized technical memory rather than algorithmic processes. His insights on knowledge formation can inform discussions on artificial intelligence, offering a perspective on the ontology of AI and moral agency. Understanding the relationality of input and output in knowledge transmission may provide valuable insights for interpreting the role of artificial intelligence in contemporary contexts, “everything was reduced to a calculation that served the order of deception” (Stiegler, 2012, p. 64). Failure on thinking and decision making changes the epistemology and ontology of knowledge which may lead to the inability of individuals to fulfil their civic rights and the breakdown of the democratic system. Most common outcome of it related with environmental issues would be the denial of climate crisis in the post truth era.

In relation with Stiegler’s early works, a recent study reveals the effects and ethical concerns of one of the main marketing gadgets of platform capitalism implemented through AI. Recommender Systems (RSs) is complex, involving concerns such as manipulation, identity reshaping, and impacts on knowledge and critical thinking (Bonicalzi et al., 2023). RSs can manipulate and deceive users, leveraging biases and vulnerabilities to influence behavior. They may also reshape users’ personal identity through curated content, raising questions about authenticity. RSs can limit exposure to diverse viewpoints, reinforcing echo chambers and affecting critical thinking. These ethical concerns are intertwined with personal autonomy, challenging individuals’ ability to make informed decisions free from external influence. Ethically oriented design and implementation of RSs are needed to balance personalized recommendations with respect for individual autonomy. The rapid pace of technological change often outstrips human capacity to adapt for several reasons, leading to challenges in policy-making and governance. While technology advances quickly, human cognitive, social, and regulatory capacities may struggle to keep up with the speed and complexity of these developments. This discrepancy between technological progress and human adaptation poses significant implications for policy formulation and implementation. We can explore why fast policy responses are necessary in the context of technological change outpacing human adaptability.

The centralization of power within specific entities, such as technology firms or governmental bodies, can result in disparities, obstacles to entry, and cultural changes that may deviate from ethical standards. Another work forms the term “The concept of ‘data colonialism’” as discussed by Couldry and Mejias in 2018 highlights the exploitation of humans and human lives through the appropriation of data by AI. Drawing parallels to historical colonialism, data colonialism is seen as a means of exploiting individuals for profit by Big Tech’s. This perspective is important in understanding the ethical implications of AI and bias.

Global justice concerns in AI revolve around advancing equality, inclusivity, and impartiality in the creation and implementation of AI technologies worldwide. By highlighting ethical obligations and fostering international collaboration, conversations on global justice strive to guarantee that AI progress serves the interests of all people and societies, especially those in disadvantaged or overlooked areas. Resolving transnational issues concerning AI regulation, technological dominance, and the advocacy for global justice demands cooperative endeavors, ethical frameworks, and a dedication to maintaining ethical norms within the AI environment.

AI in Democracies

The differences in today’s technology, particularly AI, compared to innovations of past centuries reflect a paradigm shift in the complexity, scale, and interconnectedness of modern technological innovations. Understanding and addressing the social, political, and environmental implications of

AI technologies require interdisciplinary collaboration, ethical reflection, and proactive governance to harness the benefits of technology while mitigating potential risks and ensuring a sustainable and inclusive future for all.

The intersection of responsible AI and climate action in international relations presents a complex landscape that requires careful navigation. Coeckelbergh (2021) emphasizes the importance of addressing issues of freedom and justice on a global scale when utilizing AI for climate-related initiatives. The potential of AI in transforming climate action is evident, as highlighted by (COWLS et al., 2021), who identify the European Union as a key player in leveraging AI for combating climate change. The recommendations provided in their study offer valuable insights into harnessing AI opportunities while minimizing environmental impact. Moreover, the study by Rolnick et al. (2019) underscores the promising research questions and business prospects that arise from utilizing machine learning to tackle climate change.

Responsible AI, Climate Action and Democratic Values

Artificial Intelligence (AI) plays a crucial role in democracies' climate action strategies by significantly impacting environmental initiatives through various key mechanisms. Firstly, AI's ability to analyze extensive climate-related data enables policymakers to make well-informed decisions and develop effective mitigation strategies based on valuable insights and predictive analytics. Secondly, AI optimizes resource allocation and energy consumption, leading to more sustainable practices and reduced environmental impact by identifying consumption patterns and recommending efficient resource management strategies. Additionally, AI enhances monitoring and compliance efforts by tracking emissions, ensuring regulatory adherence, and strengthening enforcement mechanisms, thereby holding industries accountable for their environmental footprint. Furthermore, AI drives innovation by fostering the development of sustainable technologies and renewable energy solutions, accelerating progress towards climate resilience and environmental sustainability (Floridi & Mazzi, 2023). AI facilitates public engagement and awareness campaigns by delivering personalized recommendations, targeted messaging, and data visualization to educate citizens, promote sustainable behaviors, and mobilize support for climate action initiatives. By integrating AI within democratic frameworks, governments can strengthen environmental policies, mitigate climate change impacts, and advance towards a more sustainable and resilient future for all, ultimately contributing to global climate action goals. In summary, the integration of AI in democracies is essential for advancing climate action goals by enabling data-driven decision-making, optimizing resource management, ensuring regulatory compliance, fostering innovation, and enhancing public engagement. By harnessing the power of AI within democratic frameworks, governments can strengthen their environmental policies, mitigate the impacts of climate change, and work towards a more sustainable and resilient future for all.

Responsible AI, Climate Action, and Democratic Values are interconnected through ethical, social, and environmental implications. Responsible AI involves fairness, accountability, and transparency, essential for upholding democratic values like equality and justice. The debate on AI ethics has intensified due to AI's significant societal impact (Vakkuri et al., 2022). In Climate Action, AI aids in monitoring and mitigation efforts but poses environmental challenges due to energy consumption. Balancing AI's role in climate solutions with mitigating its environmental impact is crucial. Ethical implications of AI extend to Sustainable Development Goals, emphasizing alignment with societal values. For example ethical considerations in AI applications for sustainable development, like water quality monitoring, are vital. The link between responsible AI, Climate Action, and Democratic Values highlights the need for ethical AI development to align with democratic principles, environmental sustainability, and societal well-being. Promoting responsible AI practices, addressing bias, and considering environmental impact can harness AI for the common good while upholding democratic values and advancing climate action (Floridi & Mazzi, 2023).

Ethical Futures: AI and Climate Action

Responsible AI has the potential to significantly impact Climate Action in International Relations by offering innovative solutions to combat climate change. AI technologies can enhance decision-making processes related to climate policy, improve understanding of climate change, and contribute to effective climate crisis management (COWLS et al., 2021). By leveraging AI, governments can achieve

national and international climate goals more efficiently through climate nudging and regulation (Nordgren, 2022). Additionally, AI can aid in the development of climate change mitigation and adaptation technologies, leading to more effective strategies in addressing climate challenges (Verendel, 2023). Furthermore, the ethical and political challenges associated with AI for climate, such as issues of freedom and justice at a global level, highlight the importance of responsible AI use in the context of climate action (Coeckelbergh, 2022). Implementing responsible AI practices can help restore the link between carbon emissions and climate events, facilitating litigation and promoting sustainability (Herrera-Vega, 2022). Moreover, the development of trustworthy AI frameworks and responsible AI principles is crucial to ensure that AI systems operate in an ethical and accountable manner (Stanley, 2023; Sanderson et al., 2021). In the realm of international cooperation, the use of AI in addressing climate change aligns with the Principle of Common Concern, providing a basis for justifying and guiding collaborative efforts in mitigating global warming (Cottier et al., 2014). International organizations like UNESCO and IEEE have proposed guidelines for responsible and ethical AI development, emphasizing values such as human rights, justice, and responsibility (Ronanki, 2023). These guidelines can serve as a foundation for promoting responsible AI practices in the context of climate action. In conclusion, responsible AI has the potential to transform Climate Action in International Relations by offering innovative solutions, enhancing decision-making processes, and promoting ethical and accountable use of AI technologies in addressing climate change challenges.

Conclusion and Call to Action

The integration of ethical, explainable, and accountable AI into climate action and international relations is not just beneficial but necessary for a sustainable and equitable future. Policymakers, researchers, and technologists must consider these AI principles when designing and implementing AI solutions to ensure that the advancements in AI contribute positively to global challenges. A unified approach to AI ethics, transparency, and accountability will be essential in leveraging AI's full potential to combat climate change and enhance international cooperation.

The call for responsible AI practices within the realm of climate challenges highlights the essential need for ethical considerations and political awareness in utilizing AI technologies for environmental sustainability. The integration of responsible AI and climate action in international relations demands a comprehensive approach that takes into account ethical frameworks, political implications, and environmental sustainability. Stakeholders must prioritize ethical considerations, seize AI opportunities, and ensure the trustworthiness of AI applications to effectively tackle climate challenges. By adhering to ethical guidelines and promoting responsible AI practices, stakeholders can harness the transformative power of AI to effectively address climate issues.

References

- Aaronson, S. A. (2019). Data is different, and that's why the world needs a new approach to governing cross-border data flows.(5). <https://doi.org/10.1108/DPRG-03-2019-0021>
- Ahmad, T., Ahmad, T., Zhang, D., Huang, C., Huang, C., Zhang, H., Dai, N.-Y., Song, Y., Song, Y., & Chen, H.. (2021). Artificial intelligence in sustainable energy industry: Status Quo, challenges and opportunities.289. <https://doi.org/10.1016/J.JCLEPRO.2021.125834>
- Bonicalzi, S., De, M., & Giovanola, B. (2023). Artificial intelligence and autonomy: On the ethical dimension of recommender systems. *Topoi*, 42(3), 819-832. <https://doi.org/10.1007/s11245-023-09922-5>
- Charitsis, V. (2019). Survival of the (data) fit: Self-surveillance, corporate wellness, and the platformization of healthcare. *Surveillance & Society*, 17(1/2), 139-144. <https://doi.org/10.24908/ss.v17i1/2.12942>
- Coeckelbergh, M. (2021). AI for climate: Freedom, justice, and other ethical and political challenges. *AI Ethics* 1, 67–72. <https://doi.org/10.1007/s43681-020-00007-2>
- Coeckelbergh, M. (2022). Digital Technologies, Temporality, and the Politics of Co-Existence. Palgrave Macmillan. <https://doi.org/10.1007/978-3-031-17982-2>
- Cottier, T., Aerni, P., Karapinar, B., Matteotti, S., Sépibus, J., & Shingal, A. (2014). The principle of common concern and climate change. *Archiv Des Völkerrechts*, 52(3), 293. <https://doi.org/10.1628/000389214x14186502494027>
- Cowls, J., Tsamados, A., Taddeo, M., & Floridi, L. (2021). The ai gambit: leveraging artificial intelligence to combat climate change—opportunities, challenges, and recommendations. *AI & Society*, 38(1), 283-307. <https://doi.org/10.1007/s00146-021-01294-x>
- Couldry, N. & Mejías, U. (2018). Data colonialism: rethinking big data's relation to the contemporary subject. *Television & New Media*, 20(4), 336-349. <https://doi.org/10.1177/1527476418796632>
- Curmally, A., Sandwidi, B. W., & Jagtiani, A. (2022). Artificial intelligence solutions for environmental and social impact assessments. In A. Fonseca (Ed.), *Handbook of Environmental Impact Assessment* (pp. 163-177). Edward Elgar Publishing.
- Dauvergne, P. (2022). Is artificial intelligence greening global supply chains? Exposing the political economy of environmental costs. *Review of International Political Economy*, 29(3), 696-718.
- Denney, R. (2022). Opportunities for artificial intelligence in environmental compliance. *Environmental Law*, 52(1), 99-114.
- EU Artificial Intelligence Act, Up-to-date developments and analyses of the EU AI Act (2024), <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>
- Floridi, L. & Chiriatti, M. (2020). Gpt-3: Its nature, scope, limits, and consequences. *Minds and Machines*, 30(4), 681-694. <https://doi.org/10.1007/s11023-020-09548-1>
- Floridi, L. & Cowls, J. (2019). A unified framework of five principles for ai in society. Issue 1. <https://doi.org/10.1162/99608f92.8cd550d1>
- Floridi, L. & Mazzi, F., (2023). The ethics of artificial intelligence for the sustainable development goals. Philosophical Studies Series. <https://doi.org/10.1007/978-3-031-21147-8>
- G7 AI Pact, (2024) <https://digital-strategy.ec.europa.eu/en/policies/ai-pact>
- Herrera-Vega, E. (2022). Harnessing ethical ai surveillance for climate change governmentality. *Transdisciplinary Journal of Engineering & Science*, 13. <https://doi.org/10.22545/2022/00205>
- King, B., & Petty, R. (2021). The rise of technosocialism: How inequality, AI and climate will usher in a new world. Marshall Cavendish International Asia Pte Ltd.
- Labe, Z. M., & Barnes, E. A. (2021). Detecting climate signals using explainable AI with single-forcing large ensembles. *Journal of Advances in Modeling Earth Systems*, 13(6), e2021MS002464.

- Lethal Autonomous Weapon Systems, US Policy, Defence Primer, (2024), <https://crsreports.congress.gov/product/pdf/IF/IF11150>
- Maupin, J. (2017). The G20 countries should engage with blockchain technologies to build an inclusive, transparent, and accountable digital economy for all (No. 2017-48). Economics Discussion Papers.
- Mazzi, F. & Floridi, L. (2023). The ethics of artificial intelligence for the sustainable development goals. Philosophical Studies Series. <https://doi.org/10.1007/978-3-031-21147-8>
- Mehmood, M. U., Chun, D., Han, H., Jeon, G., & Chen, K. (2019). A review of the applications of artificial intelligence and big data to buildings for energy-efficiency and a comfortable indoor living environment. *Energy and Buildings*, 202, 109383
- Miasayedava, L., McBride, K., & Tuhtan, J. A. (2022). Automated environmental compliance monitoring of rivers with IoT and open government data. *Journal of Environmental Management*, 303, 114283.
- Nordgren, A. (2022). Artificial intelligence and climate change: ethical issues. *Journal of Information Communication and Ethics in Society*, 21(1), 1-15. <https://doi.org/10.1108/jices-11-2021-0106>
- Omitaomu, O. A., & Niu, H. (2021). Artificial intelligence techniques in smart grid: A survey. *Smart Cities*, 4(2), 548-568.
- Priya, A. K., Devarajan, B., Alagumalai, A., & Song, H. (2023). Artificial intelligence enabled carbon capture: A review. *Science of The Total Environment*, 163913.
- Ronanki, K. (2023). Re-centric recommendations for the development of trustworthy(er) autonomous systems. <https://doi.org/10.1145/3597512.3599697>
- Sanderson, C., Douglas, D., Lu, Q., Schleiger, E., Whittle, J., Lacey, J., ... & Hansen, D. (2021). Ai ethics principles in practice: perspectives of designers and developers.. <https://doi.org/10.48550/arxiv.2112.07467>
- Stanley, J. (2023). Exploring trust with the ai incident database. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 67(1), 489-494. <https://doi.org/10.1177/21695067231198084>
- Shin, D. & Park, Y. J. (2019). Role of fairness, accountability, and transparency in algorithmic affordance. *Computers in Human Behavior*, 98, 277-284. <https://doi.org/10.1016/j.chb.2019.04.019>
- Stiegler, B. (2012). Politik Ekonominin Yeni Bir Eleştirisi İçin. Monokl.
- Vakkuri, V., Kemell, K., Tolvanen, J., Jantunen, M., Halme, E., & Abrahamsson, P. (2022). How do software companies deal with artificial intelligence ethics? a gap analysis. The International Conference on Evaluation and Assessment in Software Engineering 2022. <https://doi.org/10.1145/3530019.3530030>
- Verendel, V. (2023). Tracking artificial intelligence in climate inventions with patent data. *Nature Climate Change*, 13(1), 40-47. <https://doi.org/10.1038/s41558-022-01536-w>
- Yeung, K. (2020). Recommendation of the council on artificial intelligence (OECD). *International legal materials*, 59(1), 27-34.

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