



Is unchecked AI market growth causing global crises?

The Paradox of AI: Questioning its Existence and Environmental Impact

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Peter Skrzypczak

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The advent of artificial intelligence (AI) has been hailed as a significant technological advancement, with the potential to revolutionize various industries and improve human life.

(Cortés et al., 2021)(Campbell et al., 2021)(Cheng et al., 2021)(Shabbir & Anwer, 2018)
(Hasan et al., 2023)(Artificial Intelligence: 70 Years Down the Road, n.d)(Qin et al.,
2023)(Thiebes et al., 2020)(Khamis et al., 2019)(Velarde, 2019)(Gruetzemacher &
Whittlestone, 2019)(Vinuesa et al., 2020)(Pavaloiu & Köse, 2017)(Ezeani, 2022)
(Makridakis, 2017)(Hendrycks et al., 2023)(Bengio et al., 2023)(Tomlinson et al., 2023)

However, this enthusiasm is tempered by the growing recognition that AI's existence may have questionable benefits, and its environmental impact could be detrimental to

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the very resources it requires to function effectively.(Qin et al., 2023)(Thiebes et al., 2020)

The concern revolves around the fact that AI's energy consumption and resource usage are accelerating global climate change, thereby destroying the environment that provides the necessary resources for its operation, as well as the human species that created it.(Hasan et al., 2023)(Cheng et al., 2021)

This paradoxical situation raises the question: is AI, by its very design, self-destructive?

(Owe & Baum, 2021)(Tomlinson et al., 2023)(Vinuesa et al., 2020)(Robbins & Wynsberghe, 2022)(Hasan et al., 2023)(Comber & Eriksson, 2023)(Bengio et al., 2023)(Li et al., 2023)(Wu et al., 2021)(Pachot & Patissier, 2023)(Chan, 2023)(Vanderbauwhede, 2023)(Camaréna, 2021)(Wynsberghe, 2021)(Cowls et al., 2021)

Indeed, the significant energy requirements of AI systems have emerged as a major contributor to the escalating environmental challenges we face. The rapid growth and integration of AI have led to an increase in energy-intensive data centers and computationally demanding algorithms, which in turn have increased greenhouse gas emissions and contributed to the depletion of natural resources.(Wu et al., 2021)(Pachot & Patissier, 2023)

This rebound effect, where the complexity and capabilities of AI systems continue to grow, further exacerbates the environmental impact, leading to a concerning feedback loop.(Pachot & Patissier, 2023)

While AI has the potential to aid in environmental protection and conservation through applications such as monitoring and predicting environmental changes, the overall impact of AI on the environment remains a subject of debate and ongoing research.(Hasan et al., 2023)(Pachot & Patissier, 2023)

Advocates argue that AI can be leveraged to improve resource management, optimize energy usage, and support sustainable development goals.(Hasan et al., 2023)

However, the reality is that the current integration of AI is still not prominent enough to ensure a net positive impact on the environment.(Camaréna, 2021)

The challenge lies in striking a balance between the benefits of AI and mitigating its environmental costs. To address this paradox, researchers and policymakers must work together to develop sustainable AI frameworks that prioritize environmental considerations throughout the machine learning development process, from data collection to model training and deployment.(Wu et al., 2021)(Pachot & Patissier, 2023)

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This may involve incorporating environmental indicators into algorithms, optimizing energy-efficient hardware and software, and fostering a collaborative approach between the AI community and environmental experts.(Wu et al., 2021)(Pachot & Patissier, 2023)

Only by addressing the environmental implications of AI can we ensure its long-term viability and align its existence with the preservation of the very resources it requires to function.(Wu et al., 2021)(Pachot & Patissier, 2023)

The future of AI, and indeed the future of our planet, depends on our ability to reconcile the paradox of AI's existence and its environmental impact. We must find a way to harness the transformative potential of AI while mitigating its detrimental effects on the environment. This will require a collaborative effort between the AI community, policymakers, and environmental experts to develop sustainable frameworks that prioritize environmental considerations throughout the machine learning development process. Only by creating a sustainable path forward can we ensure the long-term viability of AI and the preservation of the very resources it requires to function.

On one hand, AI has the potential to be a powerful tool for environmental protection and conservation.(Pachot & Patissier, 2023)

By monitoring and predicting environmental changes, AI-driven systems can assist in environmental planning, decision-making, and resource management, ultimately helping to improve and conserve biodiversity.(Hasan et al., 2023)

However, the negative impacts of AI on the environment cannot be ignored.(Pachot & Patissier, 2023)

The energy-intensive nature of AI, particularly in the training and inference stages of machine learning, has led to a significant increase in greenhouse gas emissions and the over-exploitation of natural resources.(Measuring the environmental impacts of artificial intelligence compute and applications, 2022)

This self-accelerating growth cycle of AI technology is putting new demands on the environment, which may lead to further environmental degradation.(Wu et al., 2021)

The challenge lies in reconciling the potential benefits of AI with its environmental costs.(Pachot & Patissier, 2023)

Researchers and policymakers are grappling with this dilemma, exploring ways to design more sustainable AI systems that minimize their environmental impact while still harnessing the technology's transformative capabilities.(Measuring the environmental impacts of artificial intelligence compute and applications, 2022)

This includes developing energy-efficient hardware and software, improving data management practices, and integrating environmental indicators into AI algorithms.(Wu et al., 2021) Only by creating a sustainable path forward can we ensure the long-term viability of AI and the preservation of the very resources it requires to function.

Developing into a life-cycle conundrum?

As the development and adoption of AI continue, it is crucial to address this complex issue and find a way to ensure that the technology's benefits outweigh its environmental costs, ultimately contributing to a more sustainable future for both the technology and the planet it inhabits.

The conundrum lies in the fact that while AI has the potential to enhance our lives, it also poses a threat to the environment that sustains it, and ultimately, the human species that created it.(Cortés et al., 2021)(Hasan et al., 2023)

One of the primary concerns regarding AI is its energy consumption, which is necessary for its operation and development.(Hasan et al., 2023)(Thiebes et al., 2020)

The energy required to power AI systems and the associated data centers is significant, and this demand is only expected to increase as AI becomes more widespread.(Pachot & Patissier, 2023)(Hasan et al., 2023)

This energy consumption, in turn, is accelerating global climate change, leading to the destruction of the very environment that provides the resources AI needs to function.(Pachot & Patissier, 2023)(Wu et al., 2021)

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In essence, the fundamental question surrounding the future of AI is whether its continued growth and proliferation, driven by its insatiable appetite for energy and natural resources, will ultimately undermine the very foundation upon which it relies, potentially leading to a self-destructive cycle.(Hasan et al., 2023)(Pachot & Patissier, 2023)

To address this paradox, researchers and policymakers must adopt a holistic approach that considers the environmental implications of AI throughout its entire life cycle, from development to deployment.(Wu et al., 2021)(Rohde et al., 2023)

This may involve developing more energy-efficient hardware and software, optimizing data management practices, and integrating environmental indicators into AI algorithms.(Wu et al., 2021)(Pachot & Patissier, 2023)

By prioritizing sustainability and environmental considerations, the AI community can work towards a future where the technology's benefits are aligned with the preservation of the planet and the continued existence of the human species that created it.

The environmental impact of AI is not limited to its energy consumption. The data required to train AI models can also have a significant impact on the environment, as the collection, storage, and processing of this data requires significant resources.(Wu et al., 2021)

What about the implicit adverse social effects of AI, such as job displacement and the widening of economic inequalities, and bias?

There are also serious concerns about the ethical implications of AI, including issues of bias, lack of transparency, and insufficient accountability. AI systems can perpetuate and amplify societal biases, potentially leading to discriminatory decision-making. The opacity of many AI models makes it challenging to understand and explain their inner workings, raising questions about transparency and trust. Additionally, the deployment of AI often lacks clear frameworks for holding developers and users accountable for the impacts of their systems, which could lead to unintended consequences and a lack of recourse. Addressing these ethical concerns is crucial as AI becomes more pervasive in our lives.

These challenges must be addressed alongside the environmental concerns to ensure that the development and deployment of AI are socially and environmentally responsible.

One of the unaddressed hidden costs in AI is the social capital and resources required to be dedicated to the increasing need for dispute resolution that arises as an increasingly unmet need as a result of the increased social violence manifested in not only pervasive conflict, but increasingly as overt conflict. The lack of people sufficiently well-trained as dedicated to both AI and philosophy/ethics to help create truly ethical practices and systems could also become a limiting factor that AI may not be able to overcome.

(Advanced Technologies for Supporting Dispute Resolution: An Analysis, 2019)(Peter Asaro, n.d)(Using Artificial Intelligence to provide Intelligent Dispute Resolution Support, 2021)(Lloyd, 2018)(Meltzer, 2019)(Algorithmic Dispute Resolution - The Automation of Professional Dispute Resolution Using AI and Blockchain Technologies, 2017)(Online Dispute Resolution (ODR) within Developing Nations: A Qualitative Evaluation of Transfer and Impact, 2014)(Artificial intelligence and machine learning in armed conflict: A human-centred approach, 2020)([2310.17688] Managing AI Risks in an Era of Rapid Progress, n.d)(Ré & Solow-Niederman, 2019)(Elliott et al., 2021)(Ho et al., 2023)(Jelinek et al., 2020)(Alessa, 2022)(ÓhÉigartaigh et al., 2020)(Faster Peace via Inclusivity: An Efficient Paradigm to Understand Populations in Conflict Zones, 2023) ([PDF] Technology and the Future of Dispute Systems Design | Semantic Scholar, 2017)

A further consideration is the impending disruption of otherwise stable capital markets and local economies as a result of economic and climate shifts affecting world weather patterns. This could increase social unrest and conflict, impacting the ability of AI to be applied in a stable and beneficial manner.(Wu et al., 2021)(Hasan et al., 2023).

Currently, few, if any, effective and well-tested frameworks ensuring social stability and healthy communities exist.

(Rolnick et al., 2022)(Bengio et al., 2024)(Vinuesa et al., 2020)(Managing AI Risks in an Era of Rapid Progress, n.d)(Galaz et al., 2023)(Rohde et al., 2023)(Tomlinson et al.,

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2023)(Hendrycks et al., 2023)(Taddeo et al., 2021)(Cowls et al., 2021)(Sellers et al., 2019)(Chan, 2023)(Chen et al., 2023)(Effah et al., 2022)(Klinenberg et al., 2020)

Additionally, the disposal of AI-related equipment, such as servers and other hardware, can contribute to the growing problem of electronic waste, further exacerbating the environmental crisis.(Pachot & Patissier, 2023) The potential of AI to reduce social cohesion by increasing competition for limited resources, inevitably leading to conflict cannot be easily disregarded, as it is already manifest. Examples include: climate-induced migration, competition over dwindling water supplies, and the displacement of workers due to automation.

As the rate of climate change increases, the disruptions of existing environmental conditions conducive to human survival, as well as the energy resource and supply disruptions will only increase, creating a net loss in survivable habitats for the species that is rapidly, perhaps too eagerly, adopting AI into its infrastructure in an unsustainable framework (Chan, 2023)(Stahl, 2021)(Vinuesa et al., 2020). Current reports project that the energy demand of AI systems will constitute one of the largest contributors to greenhouse gas emissions in the coming decades, thereby accelerating the very destruction of the environment that provides the necessary conditions for AI's continued existence (Jelinek et al., 2020)(Bengio et al., 2024).

Addressing the environmental impact of AI is, therefore, a critical challenge that must be tackled to ensure the sustainable development of this technology.(Pachot & Patissier, 2023)(Wu et al., 2021)(Hasan et al., 2023)

Researchers and policymakers are exploring various strategies to mitigate the environmental impact of AI, such as developing more energy-efficient AI systems, implementing sustainable data management practices, and promoting the use of renewable energy sources to power AI infrastructure. (Hasan et al., 2023)

However, the path to reconciling the existence of AI with its environmental impact is not a straightforward one, and it will require a concerted effort from all stakeholders, including the AI community, policymakers, and the public, to find a sustainable way forward, if there is one.(Pachot & Patissier, 2023)(Wu et al., 2021)

To what end, and why?

In conclusion, the paradox of AI's existence and its environmental impact is a complex issue that demands careful consideration and a holistic approach to ensure the long-term sustainability of both the technology and the environment it relies upon.(Hasan et al., 2023)

As the development and adoption of AI continue to accelerate, it is essential that we address these challenges head-on, in order to harness the benefits of AI while mitigating its potential for self-destruction.

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