

India needs Green, and not Red, AI

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Opinion

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Artificial Intelligence is evolving into a powerful technology. It is no longer limited to smartphones and computers and is driving automation and deep learning. Artificial Intelligence (AI) is the technology behind driverless cars, automated drones and humanoid robots. AI is transforming the way we communicate, learn, innovate and do just about everything. However, as we stand on the cusp of this transformation, it is vital to ask: what kind of AI do we need? The answer is clear and resounding – India needs to adopt the Green AI pathway which is sustainable, inclusive, energy efficient and honours the linguistic diversity of the country.

The adoption of Green AI and not Red AI is critical for preserving India's cultural identity, reducing ecological harm and democratizing access to technology. Green AI prioritizes efficiency, accessibility and ecological sustainability. Red AI, in contrast, is characterized by resource-hungry AI infrastructure models, centralization of knowledge and social inequities. For a nation as diverse, multilingual and socioeconomically layered as India, Red AI is bound to worsen existing inequalities. Moreover, the environmental impacts of AI are becoming increasingly clear as its usage surges globally. Green AI promotes climate-responsible computation and aligns with India's commitments under the Paris Agreement and its own climate action goals.

According to a 2024 UNEP note titled AI End-to-End, it was earlier believed that AI's environmental impact would mostly be felt during its early-stage development, which needs a lot of data and computing power. Recent advancements in AI, especially the trend of training largescale models like GPT or image generators, have shown that AI poses continuous environmental challenges. On the one hand AI enhances productivity, research and decision making but on the other hand, its growing usage is raising concerns about its environmental sustainability. Large-scale data centres that power AI require seamless and uninterrupted electricity supply; development of AI technologies is resulting in cumulative energy demand. According to the Energy 2024 report of the International Energy Agency, electricity consumption from data centres, AI and cryptocurrency could double by 2026. Energy is already a highly contested resource, and the energy sector is the largest contributor to global warming.

In addition to its global warming potential, AI's increased computation power is resulting in natural resource depletion (through use of minerals needed in AI infrastructure development), high water consumption (for cooling data centres) and projected electronic waste threat. The combined impacts are significant and the UNEP has called all its member nations to establish standardized methods for measuring them. AI development based on centralized systems, high computational demands and energy consumption will strain India's resources and contribute to ongoing environmental degradation. Green AI presents itself as an alternative, emphasizing on efficiency, reduced computational needs and sustainability. Green AI is designed around minimizing environmental impact while maintaining competitive performance.

It involves the use of energy-efficient processors, data centres powered by hybrid energy, and smaller models that can be tailored to specific benchmark datasets. It can incorporate other energy and resource conservation strategies such as processing data locally on devices to reduce the need for constant cloud communication. India is home to more than a billion people who collectively speak more than 1,600 languages and dialects. This rich linguistic diversity is not merely a cultural asset but also a medium of identity, belongingness and access to information and knowledge. According to the Ministry of Education, India writes in many languages and speaks in many more voices, yet its communication has never faltered.

Green AI resonates with this inclusive philosophy; its lightweight natural language processing (NLP) models can efficiently support the country's vast linguistic diversity. While Red AI is about centralization, Green AI allows for the democratization of knowledge by developing lowcost, highly efficient and regionally relevant AI platforms. As one of the world's most linguistically diverse nations, India stands at a unique technological crossroad. Red AI systems tend to prioritize a few major languages thereby marginalizing speakers of all other languages and dialects. Any proposed expansion of Red AI to include all languages will only increase its already large ecological footprint. Green AI focuses on efficiency and accessibility and can be designed to serve speakers of regional languages with the same effectiveness as English speakers.

The efficiency-oriented approach of Green AI allows for its better integration with grassroots organizations, educational institutions and start-ups involved in AI development. The choice between Green and Red AI, amidst the ongoing AI-led technological transformation, will shape not just technological outcomes for India but also environmental and social ones. Green AI can act as a bridge and take the transformative potential of AI to all parts of the country. It can help in better knowledge dissemination, equitable development and in ensuring that the benefits of AI are widely distributed. India needs an AI that respects its rich & diverse culture and Green AI is the way forward.

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