Developing countries are being left behind in the AI race—and that's a problem for all of us

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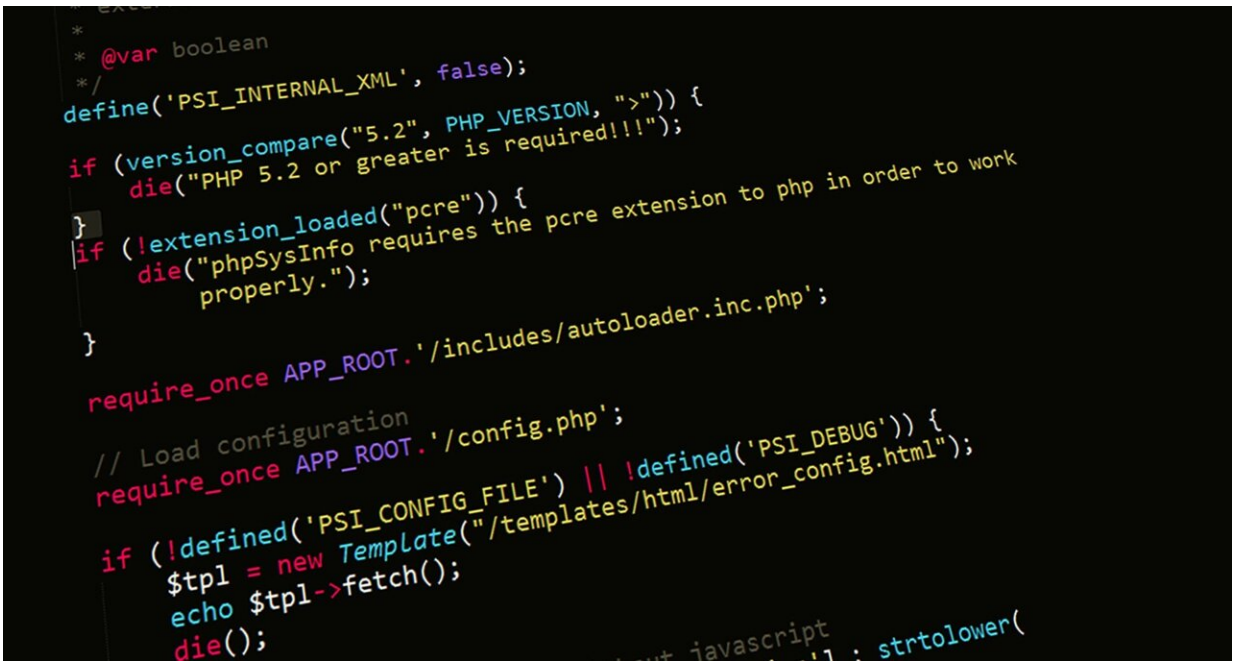

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Artificial Intelligence (AI) is much more than just a buzzword nowadays. It powers facial recognition in smartphones and computers, translation between foreign languages, systems which filter spam emails and identify toxic content on social media, and can even detect cancerous tumours. These examples, along with countless other existing and

emerging applications of AI, help make people's daily lives easier, especially in the developed world.

As of October 2021, 44 countries were reported to have their own national AI strategic plans, showing their willingness to forge ahead in the global AI race. These include emerging economies like China and India, which are leading the way in building national AI plans within the developing world.

Oxford Insights, a consultancy firm that advises organisations and governments on matters relating to digital transformation, has ranked the preparedness of 160 countries across the world when it comes to using AI in public services. The US ranks first in their 2021 Government AI Readiness Index, followed by Singapore and the UK.

Notably, the lowest-scoring regions in this index include much of the developing world, such as sub-Saharan Africa, the Carribean and Latin America, as well as some central and south Asian countries.

The developed world has an inevitable edge in making rapid progress in the AI revolution. With greater economic capacity, these wealthier countries are naturally best positioned to make large investments in the research and development needed for creating modern AI models.

In contrast, developing countries often have more urgent priorities, such as education, sanitation, healthcare and feeding the population, which override any significant investment in digital transformation. In this climate, AI could widen the digital divide that already exists between developed and developing countries.

The hidden costs of modern AI

AI is traditionally defined as "the science and engineering of making

intelligent machines". To solve problems and perform tasks, AI models generally look at past information and learn rules for making predictions based on unique patterns in the data.

AI is a broad term, comprising two main areas—machine learning and deep learning. While machine learning tends to be suitable when learning from smaller, well-organised datasets, deep learning algorithms are more suited to complex, real-world problems—for example, predicting respiratory diseases using chest X-ray images.

Many modern AI-driven applications, from the Google translate feature to robot-assisted surgical procedures, leverage deep neural networks. These are a special type of deep learning model loosely based on the architecture of the human brain.

Crucially, neural networks are data hungry, often requiring millions of examples to learn how to perform a new task well. This means they require a complex infrastructure of data storage and modern computing hardware, compared to simpler machine learning models. Such large-scale computing infrastructure is generally unaffordable for developing nations.

Beyond the hefty price tag, another issue that disproportionately affects developing countries is the growing toll this kind of AI takes on the environment. For example, a contemporary neural network costs upwards of US$150,000 to train, and will create around 650kg of carbon emissions during training (comparable to a trans-American flight). Training a more advanced model can lead to roughly five times the total carbon emissions generated by an average car during its entire lifetime.

Developed countries have historically been the leading contributors to rising carbon emissions, but the burden of such emissions unfortunately lands most heavily on developing nations. The global south generally

suffers disproportionate environmental crises, such as extreme weather, droughts, floods and pollution, in part because of its limited capacity to invest in climate action.

Developing countries also benefit the least from the advances in AI and all the good it can bring—including building resilience against natural disasters.

Using AI for good

While the developed world is making rapid technological progress, the developing world seems to be underrepresented in the AI revolution. And beyond inequitable growth, the developing world is likely bearing the brunt of the environmental consequences that modern AI models, mostly deployed in the developed world, create.

But it's not all bad news. According to a 2020 study, AI can help achieve 79% of the targets within the sustainable development goals. For example, AI could be used to measure and predict the presence of contamination in water supplies, thereby improving water quality monitoring processes. This in turn could increase access to clean water in developing countries.

The benefits of AI in the global south could be vast—from improving sanitation, to helping with education, to providing better medical care. These incremental changes could have significant flow-on effects. For example, improved sanitation and health services in developing countries could help avert outbreaks of disease.

But if we want to achieve the true value of "good AI", equitable participation in the development and use of the technology is essential. This means the developed world needs to provide greater financial and technological support to the developing world in the AI revolution. This

support will need to be more than short term, but it will create significant and lasting benefits for all.

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