Streaming service and social media content recommendations and advertising suggestions are increasingly auto-curated AI algorithms.

YOU AND I; WE AND AI

Artificial Intelligence (AI) as a concept has been around for a long time, but has only become a commercial reality in the last two decades. Until the Large Language Model ChatGPT was released in 2020, most of us that were not AI researchers or developers didn't give it much thought or use beyond what we saw in sci-fi movies. But, although we may not always even be aware, we are increasingly using AI every day.

Everyone seems to be jumping on the AI and chat-bot bandwagon – Google has Bard and DeepMind/Gemini (though they have been using AI for advertisement targeting for some time); Microsoft has Copilot and a close relationship with OpenAI; Brave now has its own search engine AI, and there is a special AI for almost every purpose – ones for helping you solve crosswords, one designed to find Waldo in the Where's Waldo books, and one that can flip a burger. Companies are considering creating "Chief AI Officer" positions, and there is talk of ever-smarter, ever more capable AI that is structurally ("architecturally") different from anything that has been seen. There is a whole new dictionary for AI as well: machine learning, natural language processing, swarm intelligence... It can be a lot to process.

What's important about the newer AI we are seeing from the last five years is that, due to advancements in processing power and AI-specific microprocessors, we the public are more aware of them, and the AI platforms continue to learn all the time. Also, the concept of Large Language Models such as ChatGPT, with its focus on written language (as opposed to coding or mathematics), has made AI feel so much more natural and "human".

The good and the bad

Like any new technology, there are also some potentially scary things about AI – commercial artists and graphic designers are worried that AI-generated art will make their jobs useless. Music industry executives are worried that AI will change their entire business model. Teachers are worried that their students will get AI to do homework for them. AI can also lie to you, and some scientists think there is a 5% chance of AI completely wiping out humanity.

But for every piece of "bad" news about AI, there is at least one good one – AI is helping to analyse rainforest sounds in conservation, and laboratory technicians think AI will help them do better work. Not everyone thinks AI will take human jobs away. There is a pair of AI binoculars that helps you identify birds; art history AI is helping to fill in some historical gaps; AI has found a material to reduce the amount of lithium used in batteries; and right here in South Africa, AI mapping is being used to try to reduce resource inequalities in communities.

Wearable technology like smart watches use machine learning to recognise patterns in human behaviour.

Every new technology has the potential for both good and bad. Cellular phones, nuclear power, electric cars, 3D-printing – there are always pros and cons to technology. Legislation is slow to catch up with new technologies. Like every other industry, AI has already started permanently changing the healthcare and clinical medicine landscape. And naturally, there is debate on whether the change is for better or worse.

AI has generated complete, yet fake, datasets like those from clinical trials. There are some significant privacy and ethical concerns with AI. How safe is the data going forward? The clinical data and images that AI is trained on comes from real patients – is that ethical? Have they consented? If AI makes a mistake in a diagnosis, whose responsibility is that?

Transforming medicine

Yet the benefits, already realised and potential ones, are immense. In late 2019, a full nine days before the World Health Organisation (WHO) made any announcements, an AI called BlueDot issued an alert about a cluster of unusual respiratory infections in Wuhan, China which became the global COVID-19 pandemic. AI has made genetic analysis faster and more efficient and is being used for screening and early detection of cancers. AI could reduce the workload of doctors, thereby reducing the chance of burnout. It could make transcribing notes faster and more efficient (but is not good at picking up nonverbal clues). It learns faster than humans do, is always up to date, and could overall increase the efficiency, accuracy and accessibility of healthcare. It could also significantly improve patient outcomes and experiences. There is so much potential. So far, AI's impact in clinical medicine has been largest in two areas – drug discovery, and image recognition in pathology and radiology.

Researchers doubted how useful the protein structure AI AlphaFold would actually be at discovering new pharmaceutical models, but they have identified lots of proteins that could be used to develop medicines to treat, for example, depression. Researchers in Canada are using a combination of discriminative and generative AI architectures to find possible new antibiotics – an increasingly important venture given the current burden of antibiotic resistance which is ever increasing. AI is even being used to predict whether a micro-organism will become resistant in the future.

Man + machine

When it comes to chest X-rays, there is some conflicting evidence – some studies say AI is better at detecting abnormalities, and some say doctors on their own are better. But the real value is in the collaboration between doctors and AI, working with a combination of human and AI-improved diagnostic accuracy in MRIs and echocardiography, and detecting breast cancers to name a few. In some cases, this cooperation between man and machine increased accuracy to 99.5%.

AI is here to stay. In the long term, we hope it will result in improvements in standards of living, help us solve problems, and create exciting new opportunities. The most significant benefits of AI may be things we have not imagined or expected, but we believe the greatest power of AI lies not in what AI can do on its own, but what humans can do with the assistance of AI.

So, what can you imagine AI can do, and more importantly, what can you imagine AI can do with you as its ethical, adaptable human partner?

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