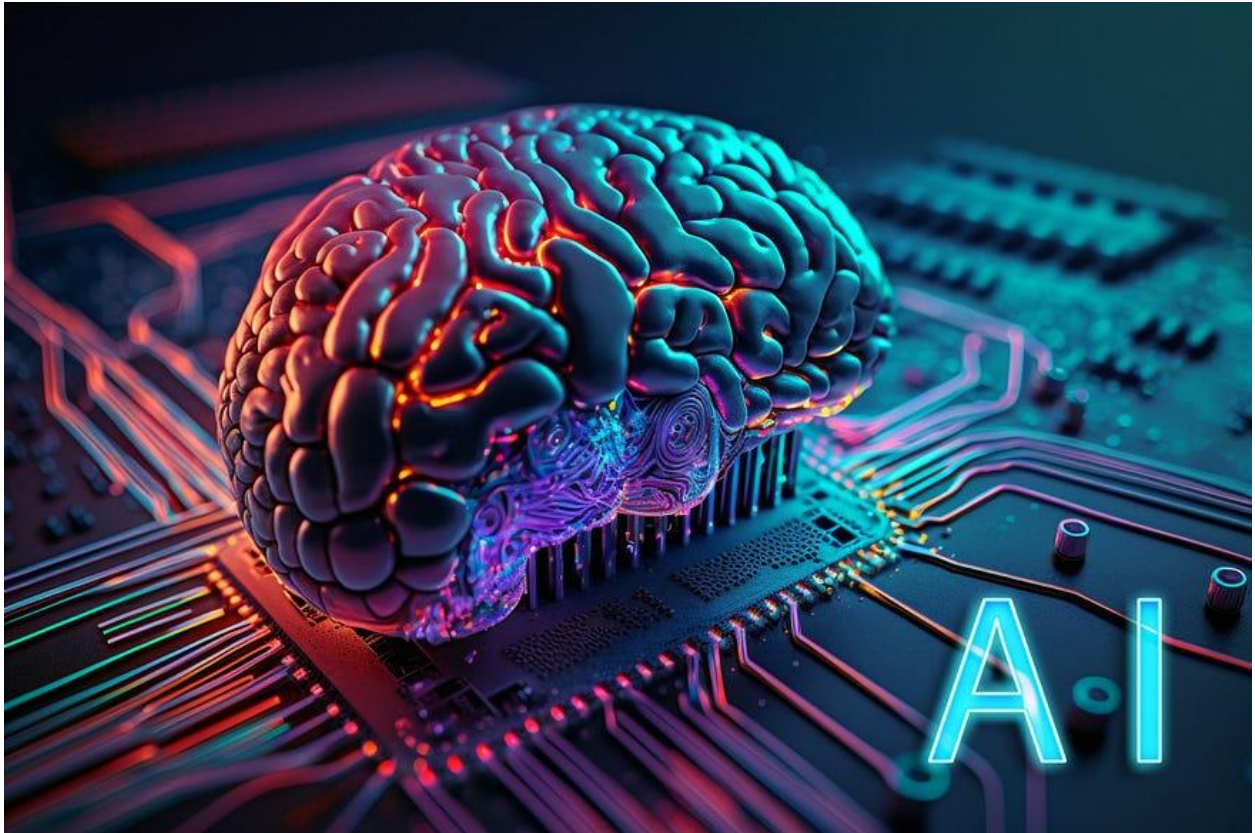


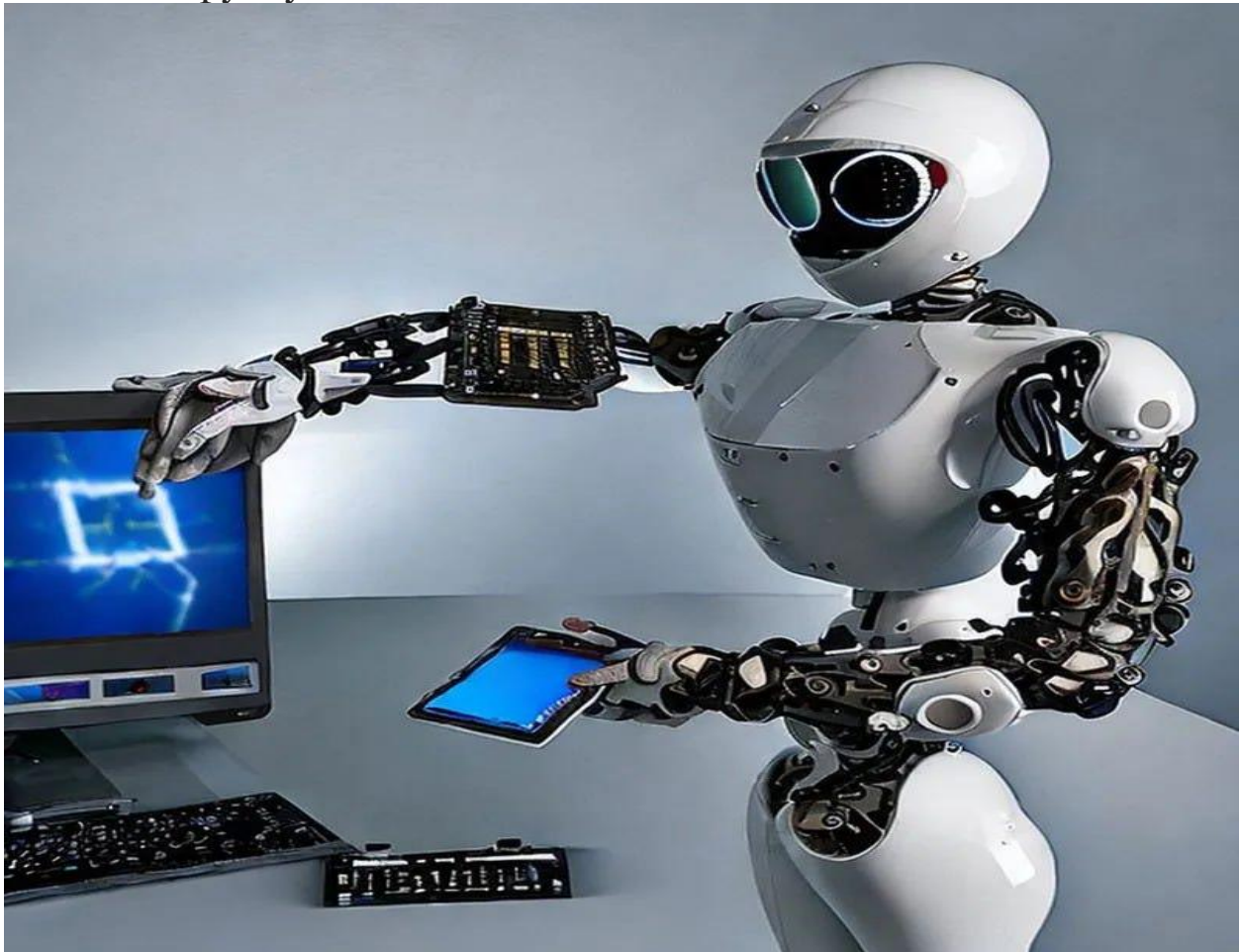
# AI THE CHANGER OF FUTURE TRAJECTORY



Artificial intelligence can change the future trajectory for global citizens in various ways. Challenges such as artificial intelligence, climate change, and hunger lie ahead. Additionally, elections are scheduled in 60 countries around the world this year. Just as there are challenges, there is also hope and anticipation for a dreamy future.

Bill Gates, the co-founder of Microsoft, has highlighted these aspirations in his recent article published on December 19th on GatesNotes.com. The article, divided into two parts, is intended for readers. The first part is released today.

If you were to contemplate the events of 2023, what comes to mind? For me, 2023 has been a year of diverse experiences, spent with people I cherish. It is a year where I utilized artificial intelligence (AI) in a significant project. The year 2023 has given us a glimpse of how AI can shape the future. Towards the end of the year, thoughts about the future occupy my mind more than ever before.



I envision a world at the end of this decade where the current youth will reside. I wonder about the state of the world in which my offspring will live several decades from now. Reflect on the advent of the internet. Initially, many might not have known how many people were using the internet. But as time progressed, people's familiarity with the internet increased. Eventually, a significant portion of the population had email IDs, engaging in online activities and seeking answers through search engines.

The advancements in technology have led us to a point where we are at the forefront of its application. It is a confusing yet thrilling time. Understanding how to best utilize AI might be a challenge, and if you don't grasp it, you might feel left behind. I had planned to explore the strategies of the Gates Foundation in utilizing AI this year. However, breaking old habits is challenging, and I continued down the familiar path throughout my exploration of these skills.

Nevertheless, 2023 is not solely crucial for AI. This year witnesses the Ukraine-Russia conflict, ongoing conflicts in Ethiopia, and the aftermath of these events causing countless people to suffer immeasurable pain and sorrow. The plight of Israelis and Palestinians has broken my heart. The situation in Sudan has also evoked similar feelings. Simultaneously, climate change is forcing millions of people to cope with extreme weather events. Globally, families are grappling with inequality and slow economic growth.

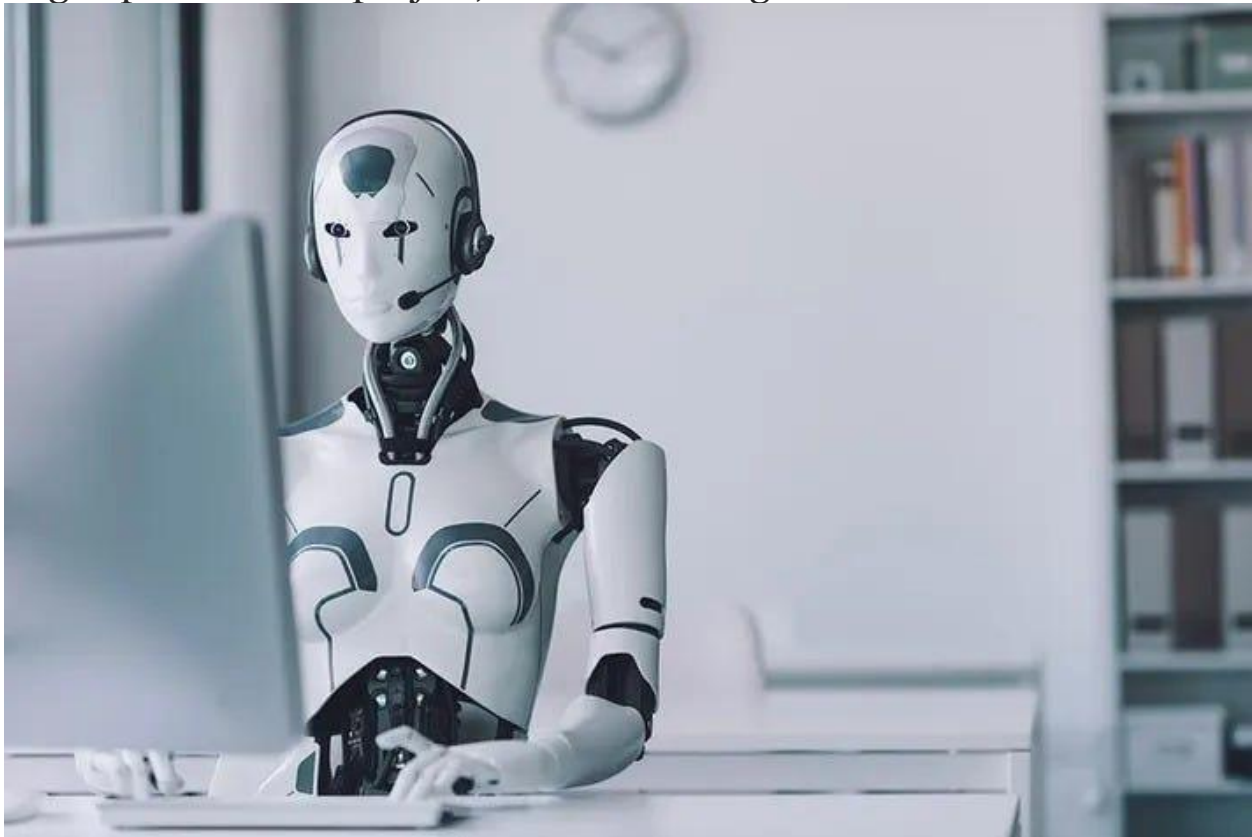


There is no doubt that time is challenging. However, regarding the future, I remain optimistic. The pace at which innovation is occurring is unprecedented. Significant progress has been made in solving complex problems, such as Alzheimer's, obesity, and sickle cell disease, using AI. My colleagues at the Gates Foundation are contributing to the improvement of global health, education, and gender equality. Collaborating with partners, they are addressing health issues affecting the most impoverished populations. Diseases like AIDS, tuberculosis, and malaria are being targeted.

If you want to avail the highest benefits from limited resources globally, you need to explore new paths. Innovation can play a significant role in this. The trajectory of continuous discovery driven by AI is progressing at a speed we have never seen before. We have witnessed substantial success in developing new medicines through AI. The process of verifying and selecting vast amounts of information required for drug discovery can be expedited with the help of AI.



Already, this approach has been instrumental in working on projects related to cancer drugs. However, the Gates Foundation's primary focus remains on finding solutions for significant health problems affecting the world's poorest. To tackle these challenges effectively, we have collaborated with researchers who have firsthand knowledge of the problems they are solving. During my visit to Senegal, one of the goals was to celebrate the 20th anniversary of the Gates Foundation's flagship innovation project, Grand Challenges.



The sole aim of Grand Challenges during this journey was to identify significant health issues and provide funding to local researchers who could solve these problems. I had the opportunity to meet many researchers in Senegal, and a significant number of them were working

on AI-related projects for Grand Challenges. Because, in 2003 when we were setting the goals for this project, AI was not a focus of the Gates Foundation's agenda. However, the way brilliant scientists are using AI to solve major problems now always inspires me. The use of AI in problem-solving is still in its early stages among scientists. We might see more widespread use in the coming years, possibly by 2025. Some initiatives may not bear fruit immediately. Yet, the creativity of scientists regarding AI is commendable.

Currently, some questions and concerns have arisen regarding AI. Here are a few that I am considering: Can AI help in developing antibiotic resistance? The body's ability to combat bacterial infections is aided by antibiotics. However, frequent use of antibiotics can reduce their effectiveness against bacteria. This is known as 'antimicrobial resistance' or AMR. Researchers at the Ghanar Institute are working on an AI technology related to coffee production. Health workers using this technology can provide advice to patients after antibiotic intake, helping to mitigate AMR.

Can AI provide personalized education to every student? AI technologies related to education are impressive. They are designed in a way that each student can use them to solve their problems independently. Apps like 'Khan Academy' and 'Mathia' are examples. These AI-based apps are extraordinary, and they may perform even better in the future. AI in high-risk pregnancy care: An AI-based ultrasound technology is being used by various researchers at the

Ghana Institute. With the help of this technology, healthcare workers can assess the risk of AMR for patients after antibiotic intake. Can AI interact with every student individually? Currently, AI technologies related to education are very impressive. These technologies empower each student to solve their own problems independently. ‘Khan Academy’ and ‘Mathia’ are examples of AI-based apps that are outstanding. In the future, these apps may work even better.

AI in high-risk pregnancy care: Researchers at the Ghanaian Development Organization are working on an AI technology that can help healthcare workers give advice to patients about AMR risk reduction after antibiotic intake. Can AI assist healthcare professionals with medical information? When dealing with complex patients, it is necessary to know their medical history urgently. In countries like Pakistan, many people do not keep records of such information. Mariam Mustafa’s team is working on a mobile app that health workers in Pakistan can use to easily save patient information related to maternal health.

Can AI help in dealing with HIV/AIDS risk? Many people feel uncomfortable discussing their sexual life with healthcare professionals when seeking assistance with HIV. However, accurate detection of risks related to HIV and preventive measures are crucial. In South Africa, a new chatbot is making it easier to detect HIV risks. This chatbot can provide advice 24 hours a day. It can also provide health workers with information related to healthcare. AI in healthcare

information: For patients with complex diseases, it is necessary to know their medical history urgently. In countries like Pakistan, many people do not keep records of such information. Mariam Mustafa's team is working on a mobile app that health workers in Pakistan can use to easily save patient information related to maternal health.

AI's role in malnutrition: I am often asked a question in the context of solving malnutrition. That question is, if I am asked to solve only one problem, what would I choose? I have always given one answer — solving malnutrition. It is the largest health disparity in the world. About one-fourth of the world's children suffer from malnutrition. In the past decade, researchers have found that in areas where malnutrition rates are high, vaccines such as those for polio do not work as effectively. Research has shown that the rate of polio in children is not decreasing in areas where malnutrition rates are high. The suspicion of researchers goes towards a bacterium that is inside the gut. This bacterium is a microbe (beneficial microorganism). In 2013, microbiologist Jeff Gordon published a groundbreaking research paper. It revealed that a bacterium called *B. infantis* works in the gut microbiome of malnourished children in Malawi. It helps in the absorption of nutrients in the child's body. If there is a lack of *B. infantis* in the gut, the nutrients may not be absorbed adequately, leading to malnutrition. We have seen that addressing the issue of malnutrition in children could be a significant step in battling a broad range of health disparities. The Gates Foundation's partners have been working year after year on the third phase of research in this area. In



this phase, research is being conducted on using *B. infantis* bacteria mixed with the mother's milk as a supplement. The research is currently being tested on over 16,000 children in five countries. So far, the results are promising, showing that introducing *B. infantis* into the gut helps the microbiome grow and become fully functional. In the fight against malnutrition, such interventions may play a significant role.

In 2024, we may learn more about how this knowledge can be applied to save lives. I am eagerly anticipating how we can use our intelligence to work towards making AI another home for equality for the world. When a technology is developed, rich countries benefit first, and poor countries benefit later. AI, by reducing this divide, may even eliminate it.