

EVA STALIN IAS ACADEMY - BEST IAS COACHING IN CHENNAI

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Reflections on Artificial Intelligence, as friend or foe

Artificial Intelligence (AI) has been dominating the headlines for its triumphs, and also fears being expressed by many including some of the best minds in AI. The Association for Computing Machinery released a statement in October 2022 on 'Principles for Responsible Algorithmic Systems', a broader class of systems that include AI systems. Several leading AI experts and thinkers have been part of different cautionary messages about AI, issued by the Future of Life Institute, the Association for the Advancement of Artificial Intelligence and the Center for AI Safety. There is deep concern about AI among many who know it. What is behind this?

Areas of use, limitations and AGI

AI systems are capable of exhibiting superhuman performance on specific or "narrow" tasks, which has made it to the news in the field of chess, Go (a game several orders harder than chess) and also in biochemistry for protein folding.

The performance and utility of AI systems improve as the task is narrowed, making them valuable assistants to humans. Speech recognition, translation, and even identifying common objects such as photographs, are just a few tasks that AI systems tackle today, even exceeding human performance in some instances. Their performance and utility degrade on more "general" or ill-defined tasks. They are weak in integrating inferences across situations based on the common sense humans have.

Artificial General Intelligence (AGI) refers to intelligence that is not limited or narrow. Think of it as human "common sense" but absent in AI systems. Common sense will make a human save his life in a life-threatening situation while a robot may remain unmoved. There are no credible efforts towards building AGI yet. Many experts believe AGI will never be achieved by a machine; others believe it could be in the far future.

A big moment for AI was the release of ChatGPT, in November 2022. ChatGPT is a generative AI tool that uses a Large Language Model (LLM) to generate text. LLMs are large artificial neural networks that ingest large amounts of digital text to build a statistical "model". Several LLMs have been built by Google, Meta, Amazon, and others. ChatGPT's stunning success in generating flawless paragraphs caught the world's attention. Writing could now be outsourced to it. Some experts even saw "sparks of AGI" in GPT-4; AGI could emerge from a bigger LLM in the near future.

Other experts refute this vociferously, based on how LLMs work. At the basic level, LLMs merely predict the most probable or relevant word to follow a given sequence of words, based on the



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There needs to be systematic evaluation of the efficacy and shortcomings of Artificial Intelligence (AI) in an Indian situation even if doomsday predictions about AI use and its impact are baseless

learned statistical model. They are just "stochastic parrots," with no sense of meaning. They famously "hallucinate" facts, confidently (and wrongly) – awarding Nobel prizes generously and conjuring credible citations to non-existent academic papers.

True AGI will be a big deal if and when it arrives. Machines outperform humans in every physical task today and AGI may lead to AI "machines" bettering humans in many intellectual or mental tasks. Bleak scenarios of super-intelligent machines enslaving humans have been imagined. AGI systems could be a superior species created by humans outside of evolution. AGI will indeed be a momentous development that the world must prepare for seriously.

I believe current LLMs and their successors are not even close to AGI. But will AGI arrive some day? I reserve my judgement. However, the hype and panic about LLMs or AI leading directly to human extinction are baseless. The odds of the successors of the current tools "taking over the world" are zero.

Where the dangers lie

Does that mean we can live happily without worrying about the impact of AI? I see three possible types of dangers arising from AI.

Superhuman AI: The danger of a super intelligent AI converting humans to slaves. I do not worry about such a highly unlikely scenario.

Malicious humans with powerful AI: AI tools are relatively easy to build. Even narrow AI tools can cause serious harm when matched with malicious intent. LLMs can generate believable untruths as fake news and create deep mental anguish leading to self-harm. Public opinion can be manipulated to affect democratic elections. AI tools work globally, taking little cognisance of boundaries and barriers. Individual malice can instantly impact the globe. Governments may approve or support such actions against "enemies". We have no effective defence against malicious human behaviour. Well-meaning people have expressed concern about AI-powered "smart" weapons in the military. Unfortunately, calls for a ban are not effective in such situations. I do not see any easy defence against the malicious use of AI.

Highly capable and inscrutable AI: AI systems will continue to improve and will be employed to assist humans. They may end up harming some sections more than others unintentionally, despite the best intentions of their creators. These systems are created using Machine Learning from data from the world and can perpetuate the shortcomings of the data. They may introduce asymmetric behaviours that go against certain groups. Camera-based face recognition systems have been shown to be more

accurate on fair-skinned men than on dark-skinned women. Such unintended and unknown bias can be catastrophic in AI systems that steer autonomous cars and diagnose medical conditions. Privacy is a critical concern as algorithmic systems watch the world constantly. Every person can be tracked always, violating the fundamental right to privacy.

Another worry is about who develops these technologies and how. Most recent advances took place in companies with huge computational, data, and human resources. ChatGPT was developed by OpenAI which began as a non-profit and transformed into a for-profit entity. Other players in the AI game are Google, Meta, Microsoft, and Apple. Commercial entities with no effective public oversight are the centres of action. Do they have the incentive to keep AI systems just?

Everything that affects humans significantly needs public oversight or regulation. AI systems can have a serious, long-lasting negative impact on individuals. Yet, they can be deployed on mass scale instantly with no oversight. How do we bring about effective regulation without stifling creativity? What are the parameters about an AI system that need to be watched carefully and how? There is very little understanding of these issues.

Many a social media debate rages about AI leading to destruction. Amidst doomsday scenarios, solutions such as banning or pausing research and development in AI – as suggested by many – are neither practical nor effective. They may draw attention away from the serious issues posed by insufficient scrutiny of AI. We need to talk more about the unintentional harm AI may inflict on some or all of humanity. These are solvable, but concerted efforts are needed.

India must be prepared

Awareness and debate on these issues are largely absent in India. The adoption of AI systems is low in the country, but those used are mostly made in the West. We need systematic evaluation of their efficacy and shortcomings in Indian situations. We need to establish mechanisms of checks and balances before large-scale deployment of AI systems. AI holds tremendous potential in different sectors such as public health, agriculture, transportation and governance. As we exploit India's advantages in them, we need more discussions to make AI systems responsible, fair, and just to our society. The European Union is on the verge of enacting an AI Act that proposes regulations based on a stratification of potential risks. India needs a framework for itself, keeping in mind that regulations have been heavy-handed as well as lax in the past.

The views expressed are personal

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Jumpstarting the next phase of U.S.-India defence ties

Over the last few years, there has been incredible momentum in U.S.-India ties, driven primarily by their defence relationship. United States Secretary of Defence Lloyd Austin travelled to India from June 4-5 to reinforce the major defence partnership and advance cooperation in critical domains. Noticeably, his visit secured an agreement on a road map for defence industrial cooperation, announced as part of the U.S.-India initiative on Critical and Emerging Technology (iCET) agreement (announced in May 2022) and which had its inaugural meeting in January this year. The road map envisages boosting defence manufacturing in India through greater technological cooperation. While the objectives complement India's own self-reliance mission and its desire to lessen import dependence, it potentially repositions the U.S. in the broader context of the U.S.-India strategic relationship.

The visit's objective had two important legs: technological innovation and growing military cooperation. One of the most important steps taken during the visit was towards strengthening the bilateral defence relationship by creating a road map to promote collaboration in the defence industry. The road map aims to expedite crucial co-development and co-production initiatives, fostering stronger connections between the defence sectors of the two countries.

There was the launch of a new initiative, Indus-X, which is to provide a new impetus to the defence innovation engagement between the two countries. This builds on the U.S.-India bilateral Space Situational Awareness arrangement signed in 2022, which promises to enhance information-sharing and cooperation in the space sector. Furthermore, new areas in defence space exchanges have been identified based on the cooperation between the U.S. Space Command



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The visit of America's Defence Secretary earlier in June has prepared the ground for the Indian Prime Minister's U.S. visit next week, which could see some big ticket announcements

and India's Defence Space Agency.

India's 'Major Defence Partner' (MDP) status along with the four foundational agreements signed with the U.S. now allow for the sharing of technology and more frequent cooperation. These have not only allowed the sharing of sensitive technologies without India having to become an ally but have also proved to be effective mechanisms to prevent backsliding due to procedural difficulties or structural differences.

The Indo-Pacific imperative

During the 2+2 Ministerial Dialogue in April 2022, the U.S. Defence Secretary referred to the U.S.-India defence partnership as the cornerstone of their engagement in the Indo-Pacific. He outlined broad aspects in the Indo-Pacific including coercive actions by the People's Republic of China; the aggressive actions of Russia towards Ukraine aimed at forcibly redrawing borders and undermining national sovereignty; transnational issues such as terrorism and climate change. The combined threat assessments by India and the U.S. in the region point to China as a common and most conspicuous challenge. As stated in China's Military Power Report 2022 brought out by the U.S., the People's Liberation Army Navy is the world's largest navy by number of ships. With the Indo-Pacific region getting more contested, it is estimated that the subsurface presence of China is likely to increase in the Indian and Pacific Oceans.

Beyond the Indo-Pacific, a strong rationale for projecting broader industrial cooperation between Indian and U.S. companies in the defence sector is the existing scale of American investments in India. Behind this is an almost declaratory support by the U.S. government exhibiting its companies to support India's

defence modernisation. In the long run, this could lead to at least three dominant trends under the umbrella of U.S.-India defence cooperation: nurturing and growth of an ecosystem of joint ventures between companies; the U.S. incrementally gaining a larger share in the Indian defence manufacturing, and both sides ironing out existing impediments in co-development and co-production. American companies led by Boeing, Lockheed Martin, BAE Systems, Honeywell Aerospace, Raytheon, Textron and others partner across a range of manufacturing activities related to the defence sector with Indian companies, most prominently with Hindustan Aeronautics Limited and the Tata group. These are likely to be supplemented by linking defence start-ups from both countries through an 'innovation bridge' that was announced in the iCET agreement.

The Defence Technology and Trade Initiative (DTTI) has often been criticised for being too ambitious and caught in the maelstrom of bureaucratic resistance, technicalities related to sensitive technology transfer, and structural differences in how the India-U.S. defence ecosystems work. However, recent steps promise to jump start the DTTI by providing specific momentum to co-production and co-development in the defence sector. A standout in this regard has been the elevation of the India-U.S. relations strategic partnership with the iCET agreement.

The visit of the U.S. Defence Secretary has prepared the ground for the official state visit of Prime Minister Narendra Modi to the U.S. on June 22 which could see a few big ticket announcements, especially in the area of defence cooperation. The sky, it seems, is the limit in the emerging defence partnership between two of the world's leading democracies.

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