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# “Laws pertaining to protection of health data, informed consent and other data privacy related facets have to be enforced at a faster rate”

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**During mid-August 2023, The Robert Bosch Centre for Data Science and Artificial Intelligence (RBCDSAI) at The Indian Institute of Technology Madras’ (IIT Madras) organised the ‘Fifth AI/ML Conclave on Healthcare’ in collaboration with the Centre for Responsible AI (CeRAI) and Centre for Integrative Biology and Systems medicinE (IBSE). The event was designed to help the healthcare industry know what AI can bring to the table. One of the key mandates of RBCDSAI is to encourage wider adoption of AI and AI enabled services. At the event, team BioSpectrum India took the opportunity to speak with Prof. Balaraman Ravindran, Head, RBCDSAI and CeRAI, IIT Madras on his thoughts on Generative AI and harnessing its potential in healthcare.**

**Is Generative AI a hype? Can it bring about effective solutions in healthcare delivery in India? Also, how can LLMs ease healthcare operations? Please elaborate your views.**

ChatGPT like generative models generate so much buzz because they are easily accessible and even those who are not technically savvy are able to use it. So some of the hype with Generative AI (Gen AI) is certainly warranted, I would say. At their core, they are very sophisticated models for predicting what the next word or utterance will be when given part of a sentence or paragraph. The model learns from large datasets fed into the system from which it learns to give the desired output. For anything that you feed into the system, it becomes capable of giving a valid continuation.

In simple terms, Gen AI recalls solutions that are already put out on the internet and this is what serves as the biggest advantage for doctors who can rely on Gen AI to produce patient reports.

As a language generating tool, this is infinitely more powerful than what was available two years ago. But the biggest drawback is that it cannot synthesise anything completely new on its own or solve problems on its own. This knowledge about Gen AI’s limitation, that it is a mere tool for effective recall, if well understood, then it may be used in a variety of domains. For e.g., Doctors may use this to summarise patient notes, discharge summaries, etc. As long as there is an effective mechanism to verify the correctness of the data output, Gen AI works very well. Ideally the bulk of the work is done

by the AI models but at the end of the day a human is still eyeballing its successful outcomes. Once this workflow is established doctors can spend more time with their patients rather than compiling test reports. The caveat is that the technology is not at a point where it can function without human oversight.

A big drawback of large language models (LLMs) is hallucination. Although since last December these models have significantly improved, there are fundamental problems in the way the models are built and hence this is likely to persist in the future too. But this ability to hallucinate also provides these models some amount of *creativity.* There are various studies pointing towards Gen AI's ability in drug design, where it *hallucinates* molecules. These hallucinated molecules are tested in-silico and potential candidates may be identified. The time involved in the process of drug design therefore could be drastically reduced.

In India, there is one significant scope in delivering rural healthcare, I see evolving in the days to come. As the Gen AI models can hold realistic conversational models, front end models like Chatbots can be developed to make conversations in Indian languages or local dialects that address healthcare issues. An automated reasoning system can be built to establish a communication channel with the patient at the initial level of care. Gen AI, in the days to come, can help build meaningful patient interaction systems, which can save time and cost for both the healthcare provider as well as the receiver.

There are a lot of efforts for building Indian Language Conversational models, like IIT-M's AI4BHARAT, and we will soon see them being implemented in our healthcare systems. Once these models are developed, the country can take high-quality healthcare to villages and other remote parts of the country. Gen AI models will by then mature to have real-time conversations giving voice activated response systems and other questionnaire-based conversations a passe. Building such a wrapper around traditional/classical AI models will be Gen AI's largest success in making technology more accessible and inclusive.

**The potential of Gen AI is certainly high. How should India work towards harnessing its potential in healthcare?**

There is an urgent need for India to augment its investment and funds in quality research. The country has to necessarily build large teams, interdisciplinary centres of research focussed specifically on AI in healthcare in specific to see greater traction in healthcare applications of AI. The country so far has not been so good at setting up such niche research ecosystems, which is much needed to give these technologies the real push that it deserves.

The other major drawback is that the country has no proper access to quality data. We know that Gen AI models can be built only on good data sets. It has long been perceived that India has great data and volumes of it to conduct good research. On the contrary we don't! Efforts have to be channelised to improve the data collection methods, storage, and its retrieval to use them appropriately for proper data analytics and quality research. Mandates, hence, have to be in place to ensure swift adoption of Electronic Health Records.

In addition, laws and regulations pertaining to protection of health data, informed consent and other data privacy related facets have to be enforced at a faster rate. Training of manpower for quality data collection, and processing the data in the most ethical manner needs to be amplified at the same time. The ball has been set rolling by the National Digital Health Mission, which has taken several key steps for building the digital health infrastructure. The government is certainly cognizant of all the requirements for this adoption, it is just that the pace at which this adoption happens needs acceleration.

**Anusha Ashwin**