



THE LAST  
WORD

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# National AI Mission takes off, but...

AI startup *Sarvam*, through its use of government-provided compute resources, local talent and partnership with IIT Madras, has a good chance of being truly leading edge in terms of technology, but an all-pervasive national design and implementation will need thoughtful planning

There is a common perception that India has missed the bus, when it comes to product development in the past, deep tech entrepreneurship at present, and AI investments for the future. This author has been one of the loudest voices to point out that China and the USA are so far ahead that India may be relegated to just a user of AI developed elsewhere, rather than an innovator.

However, the inclusion of a fairly significant allocation for the National AI Mission in the last budget, and the recent appointment of Bengaluru based AI startup, *Sarvam* to build India's first sovereign Large Language Model (LLM), gives us reasons to hope that India can compete and aspire to lead.

We should first understand the context and the current state of play in AI. Stanford recently published their 2025 AI Index Report, which states that private investment in the US in AI surged to \$109.1 billion in 2024, nearly twelve times more than China's \$9.3 billion, and new model development has grown by over 20 per cent, with 40 new models emerging in the US, 15 in China and 3 in Europe. India has been missing in action.

Ever since a paper published by Google employees in 2017 titled "Attention Is All You Need", proposed a new transformer architecture, which enabled computers to understand human communication models better, AI has grown in leaps and bounds as a focus for private investment in the US with the development of LLMs, and the dominance of Nvidia for Graphics Processing Units that provide large compute capabilities, and OpenAI with ChatGPT and a Generative AI approach, that opened the floodgates for waves of new interest in AI.

The alternative provided by China's DeepSeek, has shown that the future will see a coexistence of large learning and distillation, from large to small and narrow models, and AI pervading new

systems, applications and tasks.

*Sarvam*, through its use of government-provided compute resources, local talent and partnership with IIT Madras, has a good chance of being truly leading edge in terms of technology. But, like Nandan Nilekani and UIDAI did with the India Stack and UPI, an all-pervasive national design and implementation will need thoughtful planning and rollout in six steps:

**Step 1:** Developing the architecture for the foundational model, which will need to use a transformer-based architecture, optimised for natural language processing. The architecture itself may need to support multiple models for agriculture or weather forecasting, as well as more complex country and city administration support models that will work with billions of parameters.

**Step 2:** Identifying data sources and collecting, storing, analysing and disseminating this data. The sources for datasets in and about this country are enormous, from old manuscripts, books and articles to websites, and multiple data libraries. The preprocessing task of "deduping" or eliminating duplication and redundancy, culling out inconsequential information, and removing noise before it is processed by the LLM, will all need careful selection and thoughtful design.

**Step 3:** Fine-tuning the LLM for not just large systems, but also vertical domain and horizontal functional applications, specific tasks like language input and translation, text transformation to information and contextualised knowledge, and optimising outcomes for specific geographies or application areas.

**Step 4:** Training the LLMs, which has often proved to be the biggest consumers of compute power and energy, and have to be done comprehensively to do next word or sentence prediction, constant model updating with new information, and upgrading capabilities using token replacement with newer tokens containing new knowledge, during the training process.

**Step 5:** Preparing the user community, which even in ordinary systems development and implementation, has been the reason why new applications succeed or fail in the emerging digital world. Building parallel learning modules, which assist the user through queries and understanding in the context and language chosen by the user, will be critical. Careful design of adaptive learning systems and deployment in concert with every new model, will need instructional designers of the highest calibre to ensure success.

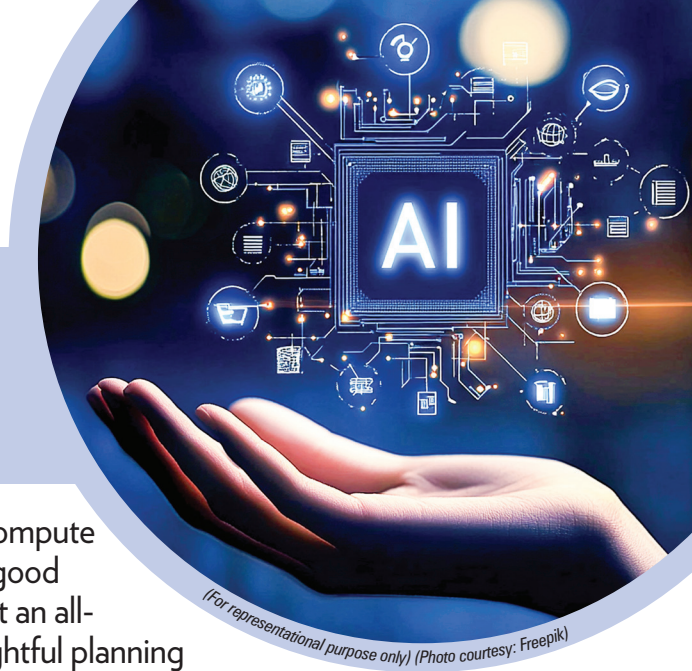
**Step 6:** Deployment of various models, after training and extensive testing in production environments, where it can start answering questions with minimum early hallucinations, which might cause early rejection.

The India AI Mission aims to build a comprehensive ecosystem and in this context, it is good that compute resources will be procured and provided centrally, and the government simultaneously partnered with GPU as a Service (GPUaaS) providers to ensure that there are no shortcuts taken, that might bring the output and outcomes from the LLM into question.

A new generation of product and platform builders can be expected to jump into the AI fray, and with investments already in place for clients by the large services companies, there is optimism that we are at the first stage of an exciting AI journey for India.

We would do well to remember that AI is still largely uncharted territory, and a national rethink may be called for on the systems of engagement between the government, organisations ranging from large enterprises to micro-SMEs and the common man, through direct access to large AI validated clean data. Exciting times ahead!

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(For representational purpose only) (Photo courtesy: Freepik)