PROVOCATEUR SESSION

From left clockwise: Sethuraman Panchanathan, Kris Gopalakrishnan, Sandeep Verma, and Govindan Rangarajan.

Four provocateurs—Sethuraman Panchanathan (Director, National Science Foundation (NSF)), Sandeep Verma (Secretary, Science and Engineering Research Board (SERB)), Kris Gopalakrishnan (Chairman, Axilor Ventures), and Govindan Rangarajan (Director, IISc)—shared their experiences and put forth thought-provoking questions to the audience.

Panchanathan spoke about the launch of artificial intelligence (AI) institutes in the US, which were meant to bring AI concepts to the forefront. These institutes were conceptualised based on academia–industry foundations, communities and international partners working together around thematic topics. The goal was to advance AI and what it can do for humanity, society, economy, and in addressing grand challenge problems. Panchanathan had wanted these institutes to span all the

50 states in the US, and not be concentrated in a few regions. Questions were raised as to how the entire nation could be covered with the 100 million $ per year budget, with 20 million $ for each centre. “Good ideas will bring resources”, says Panchanathan. Agencies were approached for partnerships. In the first two rounds of institute launches, 18 institutes were funded by NSF and its partners, covering 40 states and the district of Columbia. Panchanathan was confident that every state in the Union would be covered in the third round.

He emphasised the necessity for intentionality and intensity if we really want AI. He spoke of AI as ‘access’ and ‘inclusion’, and not just artificial intelligence. Some of the questions he raised were:

⇒ How do we ensure that innovations are everywhere, and not concentrated in certain regions?
⇒ How can we ensure that democratised talent and ideas are inspired, nurtured, motivated, and brought to life no matter where they are?
⇒ How do we fuse all the disciplinary inspirations so that the AI problems and the new frontiers of what we want to solve and therefore, make an impact, are much more interdisciplinary in nature?

Sandeep Verma spoke of the beginning of structured initiative in India, with the generation of the National Strategy for Artificial Intelligence in 2018. In 2021, an approach document was prepared to implement this Strategy. He pointed out that a structured approach is necessary to bring AI to the Indian workforce and institutions before the full potential of AI can be realised and before it can be interlinked with national missions and aspirations. One of the mega missions that has been created is called the National Mission for Cyber Physical Systems, at a value of about Rs 3600 crore, creating about 20 different technology innovation hubs.

Verma pointed out the possible digital divide that might happen in India with the adoption of the right technology for the future. He indicated that the revolution had to start from the school level, if we wanted to create the right kind of work force. How do we bring together the ~50 million students between the age group of 14–18 who are interspersed in rural schools, state universities, central universities, and higher education institutions? How do we make sure we do not miss students with true potential? At present, AI is being introduced as a subject from Class 9. Centres are being developed where AI could be used for specific purposes such as earth systems modelling.

India is poised to bring the right kind of workforce in 10–15 years, said Verma. This talent can be used to address global problems of significant interest, and for sectoral applications such as agriculture, security, and medicine.

Gopalakrishnan stressed that every citizen/person needs to be aware of the future role of artificial intelligence, and understand its widespread usage, implications and limitations.

He pointed out that every large problem is global in nature, and India represents 20% of the global population. India is still in the developing stage, and it is imperative that the development model is sustainable, affordable, and inclusive. Take health care for example. Given the diversity in the Indian population, any proposed health care solution has to be tested on the entire population. Why is collaboration between the US and India necessary? On one side, depth in AI research, entrepreneurship, and funding are available in the US. On the other side, the solutions are required in India.

There is abundant talent available in India. Gopalakrishnan believes that any new paradigm in education has to be introduced in India at the school level. The two nations need to cooperate for this. For example, US professors could come to India, seed programmes, and accelerate the growth of these sectors. There is a need to build trust between both the countries for data sharing for research. Gopalakrishnan also stressed the need to look at global standards and templates for Indian research programmes. “For every 5$ spent in the US, if you spend 1$ in India, we can double the research output”, he said.

Some of the questions he raised were:

⇒ How do we work together to accelerate the solutions?

⇒ How do we come together to work smartly, effectively and efficiently for the common good of the entire world?

Rangarajan spoke about the relation between universities and big tech companies that play a crucial role in artificial intelligence. Given the growing level of funding from big tech companies for university research, is there too much influence of big tech AI companies on university research? Does this bias AI research?

He stressed on the importance of preserving diversity of research from universities. This may be compromised if researchers use only the data from companies, which have a huge data availability. Can a time limit be set after which companies can make data freely available to institutes for academic research?

He voiced concern over the fact that big tech companies are hiring the top researchers with large salaries. Then, who is going to train the future workforce? Industries must make sure that the top talent is also retained in the universities, as it is only in universities that diversity of thinking can be preserved and there can be new ideas coming up without any pre-set interests or agendas.

In the discussion that followed, the four provocateurs addressed questions posed to them by Nandini Kannan (the Moderator for the workshop) and the participants. Some needs that were highlighted are:

⇒ A diverse workforce, mindset, and way of looking at problem sets to capture the full potential of AI.
⇒ Mindset of working together.
⇒ Centres of excellence, and community colleges.
⇒ Disruptive models of academia for the future.
⇒ Multi-lingual education.
⇒ Enabling students to study alone (online certification programmes) by providing the right kind of technology.
⇒ Multiple entries and multiple exits for students in universities.
⇒ Teacher training programmes with an integrated curriculum and new pedagogical tools.
⇒ Awareness of technologies in law schools, and in humanities and liberal arts colleges as they would have different perceptions of societal needs and understanding of technological implications.
⇒ Training of Government officials on impact of emerging technologies.
⇒ Making data available for public good, economic development, entrepreneurship and start-ups.
⇒ Building multi-disciplinary teams.