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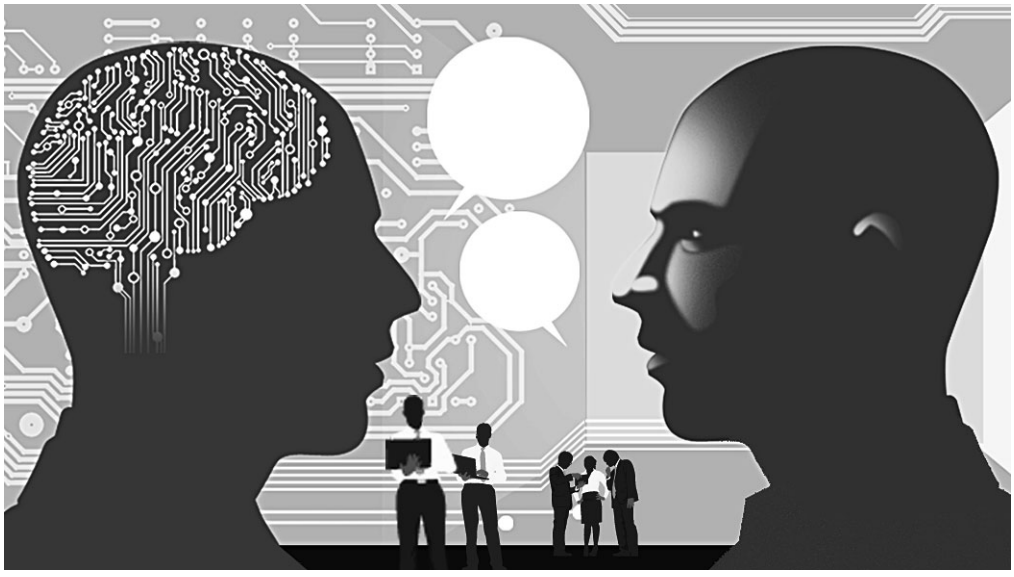

AI revolution and jobs in India

For Indian public policy thinking, there is no looming threat of large-scale job loss. A vast class of global production, of goods and services, remains in play for India

We are all in a tizzy about what new-age "artificial intelligence" (AI) systems can do. Does this harm India's hope of large-scale labour-intensive production? The picture is more optimistic than meets the eye. The AI revolution is mere statistical models; there isn't anything approaching human capabilities yet. The robots are dazzling in some narrow contexts only. Humans are remarkable when compared with today's robots. There is a vast class of global production problems that can be done in India. Our policy puzzles remain the traditional ones.

First came the computers that could play chess and defeat Garry Kasparov. Then came the computer that won "Jeopardy". Now we get astounding news stories every week about new things that the robots do well.

If production is done primarily using capital and not much labour, how would the location decisions of firms change? Robotic production will be placed by Indian and global firms in mature democracies, owing to the low cost of capital and the stability that comes from good institutions. By this reasoning, we in India could be in for a two-punch: Production will become capital-intensive, and that production will not be placed in India. Are we in for a crisis over the next decade or two, with job loss in India?

SNAKES & LADDERS

AJAY SHAH

I think these fears are overblown. What is actually going on at the frontiers of technology is more limited than meets the eye. The phrase "artificial intelligence" is highly misleading. Today's state of the art is mere statistical models applied to large and high-quality datasets. The new-age systems are merely statistical models: There is no intelligence there.

The phrase "deep learning" suggests deep insights veering on wisdom. It is a highly misleading phrase. The term "deep" here merely denotes multiple layers in a certain kind of mathematical model. There is no suggestion of insight or knowledge or wisdom. All that is going on is that statistical models are being estimated, using large-scale datasets of high quality.

A few examples are revealing. The car manufacturer, Tesla, is very keen on highly robotic manufacturing. They have realised that the best robots of today are finding it difficult to do some pretty simple operations. There was one operation, where a "flufferbot" was required to place fibreglass mats on top of a battery pack. After enormous amounts of work, they were just not able to make this work properly using a robot. Elon Musk said in April: "Humans are underrated."

Humans easily deal with complexity, inconsistency, and slight deviations from the script. Many global car manufacturers have tried to automate final car assembly and failed, because the robots cannot match the hand and eye and brain of the assembly line worker. Humans stop when things aren't working, think, and try to solve the problem using fluid general intelligence. The humble blue collar worker is streets ahead of the global state of the art in robotics in these respects.

Consider the chatbots. A few years ago, every computer enthusiast was predicting the elimination of human operators of chat sessions by "chatbots". When we came closer to the problem, however, it became clear that the robots are far from the sophistication of the humble Indian BPO employee. There was a rage of chatbot work and then it subsided. The computers are far from fluidly doing simple chats with customers.

Google recently showed examples of its new "Duplex" system where a robot makes a phone call to a restaurant, talks to the human who picks up the phone, and makes a booking. In some ways, this is a triumph. It is hard to not get excited when you hear their demo conversations. And yet, when you pause to see what has actually been done, there is no general intelligence there. Just like a computer that's been programmed to do one specific task of playing chess, this is a computer which has been programmed to do one specific task, of calling a restaurant and making a booking. There is no whiff of intelligence here.

The hype is overdone. Data quality and quantity have gone up. We are doing slightly better on the statistical methods. This is giving interesting new systems which are useful on narrow well-specified problems. This is progress, and we should utilise these possibilities to the hilt. But we should not overstate the possibilities. There is not the slightest whiff of fluid, general, flexible human-style intelligence in the picture.

For Indian public policy thinking, there is no looming threat of large-scale job loss. A vast class of global production, of goods and services, remains in play for India. We have not "missed the bus". The opportunities are available if we are able to get our act together.

By and large, orthodox views of policy remain relevant. We should develop a skilled labour force, with people who can learn new things every few years as the world changes. The traditional problems for locating production in India — infrastructure and labour law — remain important bottlenecks that need to be addressed.

We should recognise that it is rational to place capital-intensive production (such as cloud computing) in advanced countries owing to the low cost of capital, the stability and predictability that comes from good institutions, and the cheap electricity that comes from a sound energy sector. Faced with this choice, firms will pursue their self-interest, and we should not force firms to artificially place such production in India, e.g. through protectionism or data localisation requirements.

Local and foreign investors are comparing mature democracies versus India on institutional quality, and we have to up our game in order to attract investment in capital-intensive projects. We should build the policy frameworks of energy policy so as to get cheap electricity in India. We need financial sector reforms and sound tax policy so as to get a low cost of capital in India. Institutional reform that yields stability, predictability and the rule of law is required to make the private sector feel safe.

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