

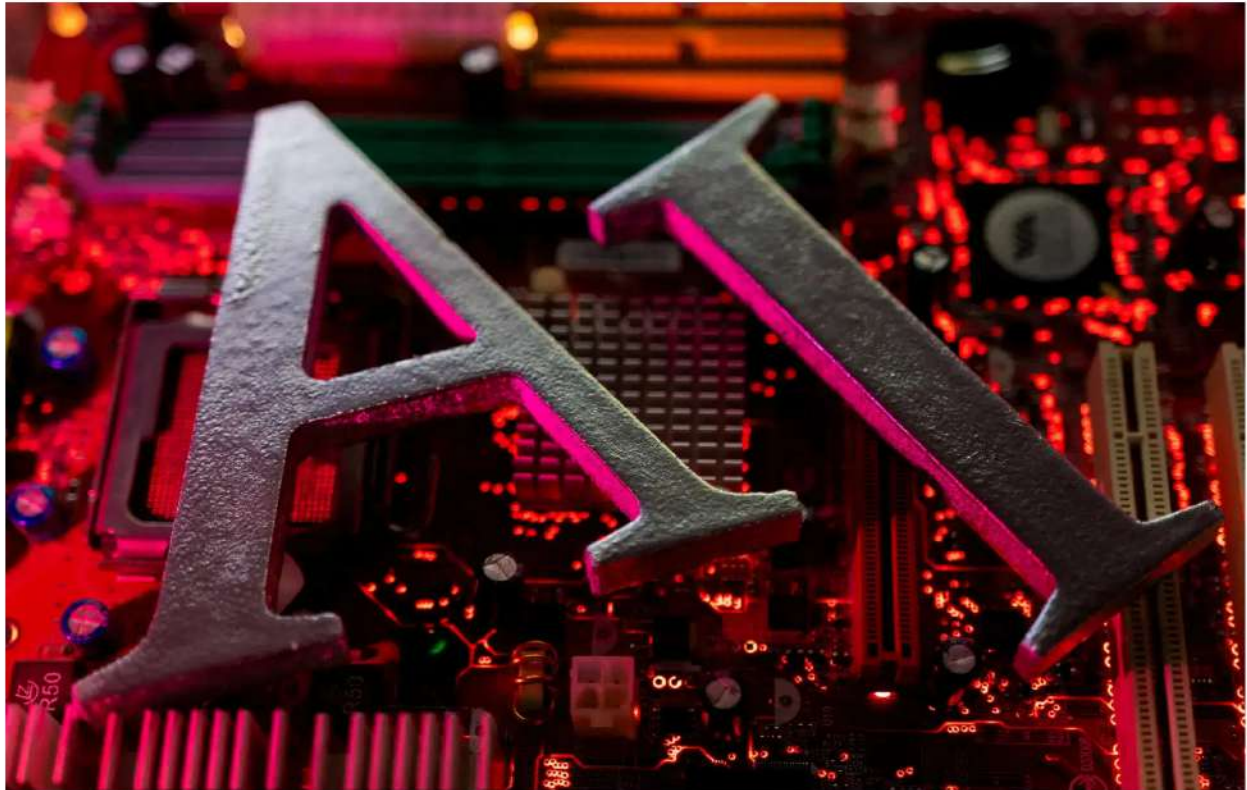
AI shrunk timeline of evolution of photonics technology: CloudPhotonix CTO

The CTO said the firm's vision is to become number one photonics provider in India, adding it is starting with "high-speed transceivers".



PTI

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New Delhi: Artificial intelligence as a disruptive technology has "shrunk the timeline" of evolution of photonics technology for the next couple of years, but beyond that more innovation is needed, a US-based technologist said here on Thursday. Sunil Khatana, Chief Technology Officer (CTO) and co-founder of India-based firm CloudPhotonix, said this in an interaction with PTI on the sidelines of a tech seminar hosted for a range of stakeholders at the India Habitat Centre here.

Photonics refers to a branch of technology concerned with the properties and transmission of photons, for example, in fibre optics.

CloudPhotonix, with its headquarters and research and development laboratory in Noida, develops cutting-edge photonics technology, products and processes, and has started with manufacturing of transceivers.

A transceiver is a device that converts electrical signals into optical signals at one end and vice versa at the other end during the course of transmission.

Khatana, based in Silicon Valley in California, earlier worked with US firms and is part of the company's overseas unit.

"We have floated a subsidiary overseas (in the US), which is wholly owned, by the India operation," he said.

During a presentation made at the seminar, the CTO touched upon aspect of artificial intelligence (AI) and machine learning in changing the paradigm of technology infrastructure in the context of photonics.

"In AI, you have a bunch of information, lot of information, lot of data. And, you training your models on that data. New information comes, you process that data. These models are very big... And, GPUs are used to train these models. No single GPUs can do that kind of training, so lot of GPUs need to be connected together. And, they need to work with each other, they need to exchange information, so that connection is very important, very fast," Khatana told PTI.

And, that is where transceivers come in, those connections need to be photonics to provide that kind of connectivity. Transceivers do that and convert electrical signal into optical signals and do the reverse on the other side, he said.

"AI actually needs fast transceivers, low-power consumption transceivers, so compared to normal data centres... where AI is a back end.. much faster transceivers than conventional ones are required. So, for the next couple of years, it has, certainly shrunk the timeline. Beyond that we need to innovate more," Khatana said.

The CTO said the firm's vision is to become number one photonics provider in India, adding it is starting with "high-speed transceivers".

"We are manufacturing and designing here. We want to start with India and then take the same model and apply it on global (scale)," he said.

Company's CEO and co-founder Tarun Sibal said the firm is building infrastructure in photonics in India.

The objective of this seminar was to educate the audience and these are customers, policy makers, industry associations, and for them to understand what photonics is.

"There is a slight misunderstanding, because it's largely an import-driven environment in India.. where copper stops, light starts or where fibre starts. And, that is where you need photonics or light to transfer large amount of data through volume speed and distance. And, what a transceiver basically does, it's a like a valve in your heart, it controls the speed, volume and distance. So, the valve in your heart controls the blood flow, this controls the data flow," he said.

The objective was to start changing the vocabulary, start educating people that photonics is not just about transmission, but display system, or where you are using signalling, or trying to transport or transfer data, or digital data, you will need photonics as a technology, the CEO said.

Currently, photonics is seen through the "prism of transmission", mainly telecom or switching system, because these are pluggable devices, where you are able to transport digital data, he said.

However, photonics has a larger definition in the context of sensing, quantum computing and display system, Sibal said, adding manufacturing uses photonics, high-speed fiber lasers or other types of lasers, not only for cutting, but powering different areas. So, yes the definition of photonics is "broader".

The top official said his firm, set up 1.5 years ago, has chosen to start with transmission and the "engine will pull the rest of the train".

"So, we are trying to do two things, for the low speeds, say 10G-25G, etc, we are building scale, where we are taking reference design and building the repeatability and testing, quality frameworks, to take it to market. And, then there is a design angle to it, the IP angle, where for higher speeds, 100G and above, we are developing a complete 'Make in India' product," he said.

Asked about the status of its 100G project, the CEO said, "We are already on track."

The subsidiary overseas is housing the R&D talent and they are working with people in Bengaluru and the firm's R&D lab in Noida, Sibal said.

"And there we will have the first prototype by second half of next year and by Q1 of 2026, we should be in production (stage) for 100G LR4, which would cover a distance of 10 km," he added.

He explained that in photonics, transmission technology has four broader categorisation -- SR4 (range of a few 100 metres), LR4 (10 km), ER4 (40 km) and ZR4 (80 km).

Sibal said 10G is still driving the demand in India and "I think with edge data centres coming in, that demand will increase".

"So, we believe, 10 Gbps (10G) is where the market...when we look at data centres, telecom, ISP providers. However, India is a unique operating environment, so we are seeing 25G, some smattering of 40G, and we do believe that in the next 18-24 years, 100G will become quite prevalent," he added.