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Artificial intelligence and the economy: Paradigm shift or hype?

August 11, 2023 | Paul H. Wick, CIO, Seligman Investments, Equity Team Lead, Technology; Sanjay Devgan, Senior Portfolio Manager, Technology; Rahul Narang, Portfolio Manager, Technology

Our technology experts weigh in on the potential impact of artificial intelligence (AI) on markets and the economy.



KEY POINTS:

- 1 The rise of AI has been years in the making, reflecting a confluence of technological trends and developments.
- 2 Progress in AI represents a significant shift in the technology marketplace.
- 3 AI presents investors with interesting and compelling investment opportunities.

We sat down with three of our technology experts to get their thoughts on the opportunities in artificial intelligence (AI). Panel participants included:

- Paul H. Wick, CIO, Seligman Investments, Equity Team Lead, Technology
- Rahul Narang, Senior Portfolio Manager, Technology
- Sanjay Devgan, Portfolio Manager, Technology

AI has become top of mind for investors and the market more broadly. What has been the driver of this narrative shift?

Sanjay Devgan: People have been trying to model human intelligence in computer systems for 30-plus years. What's interesting now is the confluence of computing power, connectivity and storage — those are the fundamental building blocks. On the compute side, we went from millions to tens of millions, to hundreds of millions, to billions of transistors, so compute power has increased exponentially. If we're talking about connectivity, we're now shipping switches that are capable of supporting 25.6 terabits per second (one terabit is a trillion bits per second). Next year, we're going to start shipping 51.2 terabit switches. And then you've had a coincident increase in memory capacity. This confluence allows you to run the calculations required for AI. If you boil it down, AI literally is just billions and billions of calculations, just simple math matrix multiplication. But you need to do it many times and then you need to bring that back. The calculation isn't complex. It's just the number of nodes needed to process it is massive.

Rahul Narang: Artificial Intelligence has been topical for several years, but the inflection started to happen last year when companies finally had the computing power and the data to harness more performance from deep neural networks. OpenAI released ChatGPT in late November for public use, which received widespread media coverage and investor interest.

Paul Wick: OpenAI's ChatGPT was the opening salvo. And then it turned out literally a week or two later that Microsoft had invested \$10 billion to gain a controlling stake in OpenAI, and that raised a lot of eyebrows.

Narang: I should say that while it seems like AI is a new thing, it's not new to us. It's been something we've been researching and investing in for many years with the help of the deep bench of central research analysts at Columbia Threadneedle Investments.

How does the advent of AI compare to things like the launch of the internet, cloud-based computing or mobile devices?

Wick: I think the advent of generative AI, and AI in general, is going to rival the advent of the internet and mobile computing as a significant trend in the technology marketplace. One area in which it's going to be a little bit different is that it's not necessarily a distribution engine. So, you think about the internet and mobile devices — you're able to consume games, do commerce online and view advertisements. Those developments were big distribution developments as well as new technology developments. Generative AI, I think, is going to be a very powerful tool for knowledge workers in particular, and I think it's going to make the internet just easier to use and much more powerful.

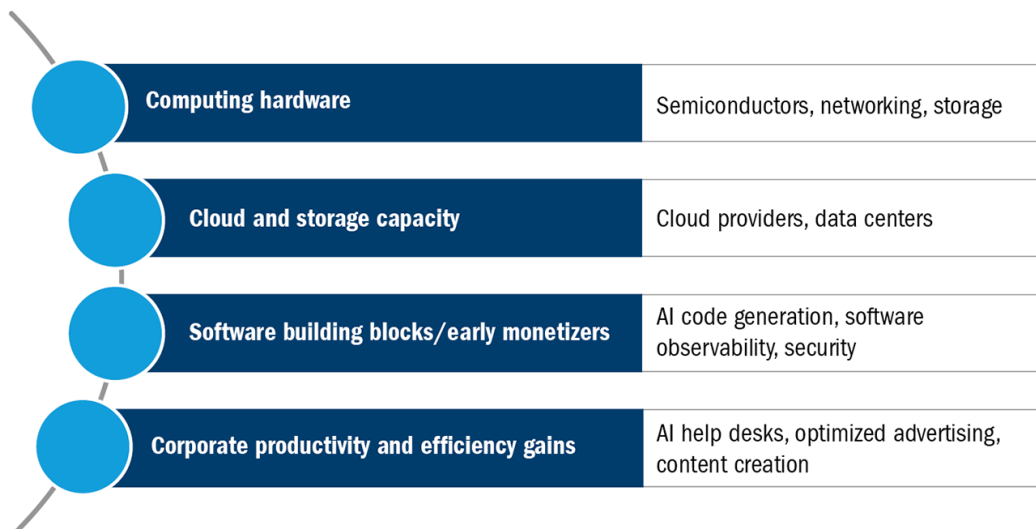
Narang: We are viewing AI as the next platform transition. You know, we had PCs, the internet, mobile era and cloud computing, and now we're seeing AI. Similar to how some of these other technologies had a lasting impact on the global economy, we expect AI to add \$7 trillion of global economic impact over a ten-year period.

What are some of the areas of opportunity in AI that you are excited about?

Narang: The speed of innovation from companies around AI is breathtaking. We are seeing a faster cadence of product releases that is helping create better products for end users. For example, Microsoft has released several co-pilots that could help drive productivity gains when writing code. Other areas where we see AI used by companies are in customer service, IT help desks, content creation, fraud detection, supply chain optimization as well as predictive maintenance. The emergence of AI in health care is reshaping how patients are diagnosed, treated and monitored. NVIDIA is doing a fair amount of work here. Specialized large language models should help speed up the discovery of new life saving drugs. We also expect to see more advanced use cases in autonomous driving and robotics over time.

Devgan: There are obviously a lot of great tangible things that you can point to today. But I don't think the really big thing has been developed yet. I think it's going to be somebody, you know, some kid sitting in his college dorm, asking "how do I leverage this?" If we go back to the transition from 3G to LTE and cellular handsets, I remember as a consumer I would just look at the web on my phone thinking, why do we need LTE? But you had businesses like rideshare applications, things like Uber and Lyft that could not exist in the 3G realm and that came to fruition because of that advance.

The opportunity set for AI is expected to expand



How fast do you expect to see these AI-related changes unfold?

Narang: The speed of change is hard to predict, but so far, it is fair to say this has been faster than most investors expected — ChatGPT reached 100 million users quickly, and NVIDIA recently delivered quarterly results with guidance a few years ahead of schedule. We continue to expect sporadic breakthroughs as the technology evolves.

ABOUT THE THOUGHT LEADER

CHIEF INVESTMENT OFFICER, SELIGMAN INVESTMENTS

Paul H. Wick

Member of the investment community since 1987

Paul is recognized as a leading technology investor. He specializes in the semiconductor and electronic capital equipment industries as well as in the software and computer hardware industries, both domestically and abroad. Paul's insight and outlook on the technology industry are frequently featured in the financial media. He received a B.A. in economics from Duke University and an MBA in finance from Duke University Fuqua School of Business.



ABOUT THE THOUGHT LEADER

SENIOR PORTFOLIO MANAGER

Rahul Narang

Member of the investment community since 1994

Rahul joined one of the Columbia Threadneedle Investments firms in 2012. Previously, Rahul was a senior vice president at Robeco Investment Management. In that role he assisted in managing a long/short equity portfolio with a concentration in technology, media, health care and retail companies. Prior to that, he was a portfolio manager at Apex Capital, Aesop Capital Partners and assistant portfolio manager at Fullerton Capital Partners. He began his career as an equity research associate at JPMorgan. Rahul received a B.S. in business administration from California Polytechnic State University.



ABOUT THE THOUGHT LEADER

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Sanjay Devgan

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Sanjay is responsible for a broad array of semiconductor companies including communication ICs, analog ICs, CPUs and PLDs. Previously, Sanjay was a vice president at Morgan Stanley providing equity research on the semiconductor industry. Sanjay received a B.S. in psychobiology from University of California, Los Angeles and an MBA in finance and information systems from Santa Clara University.



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