

Nvidia's spending \$4 billion on photonics to stay ahead of the curve in AI

Nvidia announced on Monday that it's investing \$2 billion each into Lumentum and Coherent, which are both developing photonics technology for data centers, like optical transceivers, circuit switches, and lasers, which are used to move data at high speeds over long distances. Their tech could improve energy efficiency, data transfer speeds, and bandwidth in future AI data centers, after Nvidia already capitalized on its 2020 acquisition of the network hardware company Mellanox to beef up NVLink and increase the amount of data moving between its GPUs.

For Lumentum, the nonexclusive multiyear deal includes a "multibillion purchase commitment and future capacity access rights for advanced laser components," as well as support for expanding R&D and manufacturing. Coherent's deal is described similarly, with a "multibillion-dollar purchase commitment and future access and capacity rights for advanced laser and optical networking products."

The growth of agentic AI like Anthropic's Claude Cowork and Microsoft's Copilot Tasks is driving up the bandwidth needs of AI data centers in order to support executing multiple tasks quickly. Photonics could offer a solution – optical fibers are able to support significantly higher bandwidth and lower latency than copper cables while also using less power.

Nvidia isn't the only organization paying attention to photonics, either. Last month, DARPA put out a call for research proposals for improving photonic computing,

specifically related to AI applications. Nvidia's rival AMD also acquired silicone photonics startup Enosemi last year, which it said would "accelerate" AMD's optics innovation for its AI systems.

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