

INTERSECT360 RESEARCH: POWERING DISCOVERY: THE RISE OF AI IN ACADEMIC SUPERCOMPUTING

Academic supercomputing centers are hubs for scientific discovery. The recent trend is to amplify scientific research with the latest in artificial intelligence.



Over 90% of academic HPC centers have made investments to incorporate AI into their research.

Academic AI Landscape: GPUs and HPC Trends

The adoption of advanced artificial intelligence is most evident in the incorporation of GPUs, the computational elements powering the revolution in AI. Among academic HPC centers, **92%** have incorporated computational accelerators, with GPUs from NVIDIA being the overwhelmingly preferred choice. And in academia, where testing a variety of technologies is common and seeking alternate or novel methods is often part of the charter, it is notable that **91%** of accelerated HPC workloads are utilizing NVIDIA GPUs.



The computational density of these GPUs is high. Over half (**54%**) of academic HPC-AI research centers have "broad usage" of four or more GPUs per node.



92% of academic HPC centers have incorporated computational accelerators

¹ HPC-AI Technology Survey 2023



91% of academic accelerated HPC workloads use NVIDIA GPUs

² HPC-AI Technology Survey 2023



54% of academic HPC-AI research centers have four or more GPUs per node

³ HPC-AI Technology Survey 2023

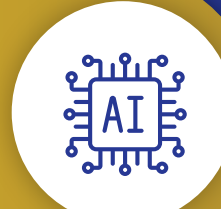
Generative AI

The major trend driving recent growth has been the promise of "generative AI" — AI capable of creating original content, whether in writing, art, or computer code.



35% academic HPC-AI sites "actively using generative AI"

⁴ HPC-AI Technology Survey 2023



37% academic HPC-AI sites "looking at building our own generative AI models"

⁵ HPC-AI Technology Survey 2023



“ AI has become critically important to supercomputing centers, both as the importance of AI in science has grown, and as the infrastructure needed for large scale generative AI and high performance computing has become virtually identical. Our newest system at TACC, Vista, has been designed with generative AI systems in mind. With 600 GH200 NVIDIA GPUs, it will vastly expand our capacity to support students and researchers in AI work. We've seen explosive demand for these resources, and more from the students than the faculty! ”

Dan Stanzione, Executive Director, TACC / Associate Vice President for Research, UT Austin and Chair of the Americas Advisory Committee of the HPC-AI Leadership Organization (HALO).

Beyond Academia: Generative AI in the Enterprise

In recent years, the adoption of generative AI has transcended the confines of academia, permeating into the corporate landscape where High-Performance Computing (HPC) and AI budgets often overlap.

While academia has long been a breeding ground for innovative research, the allure of generative AI has extended its reach into enterprise domains, where organizations harness its transformative potential to drive innovation.

Organizations that have already invested in HPC to power their business objectives are increasingly expanding those environments to encompass AI.



HPC-AI Budgets among U.S. Enterprise

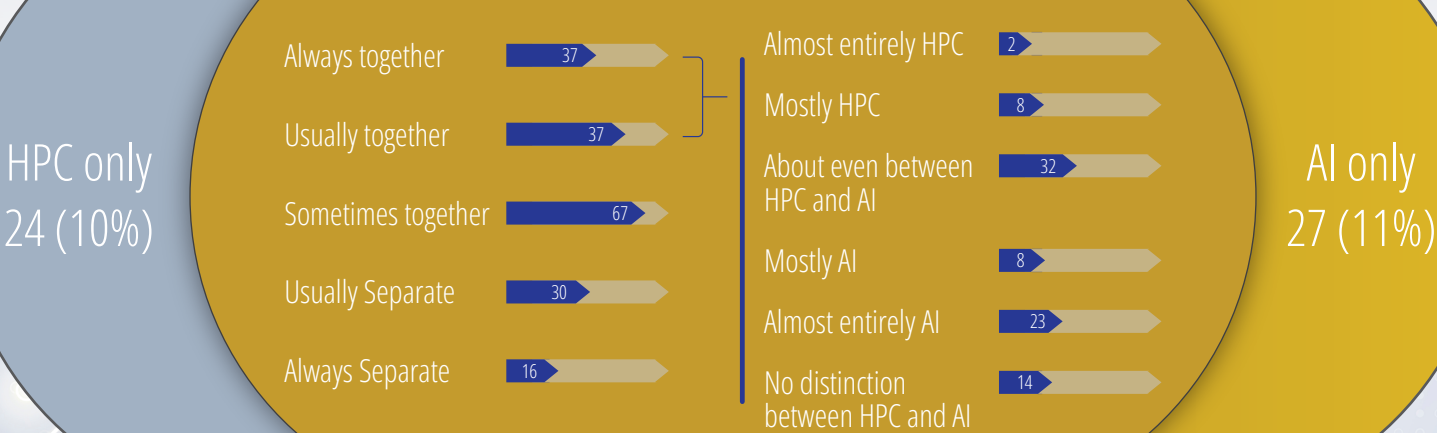
⁶ May 2024 HPC-AI Forecast and Trends

264 total contacted

251 (95%) had HPC or AI budget

13 (5%) neither HPC nor AI

200 (79%) - Both HPC and AI



Intersect360 Research Analysis



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