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Department of Data Science

Weekly Data Science Bytes

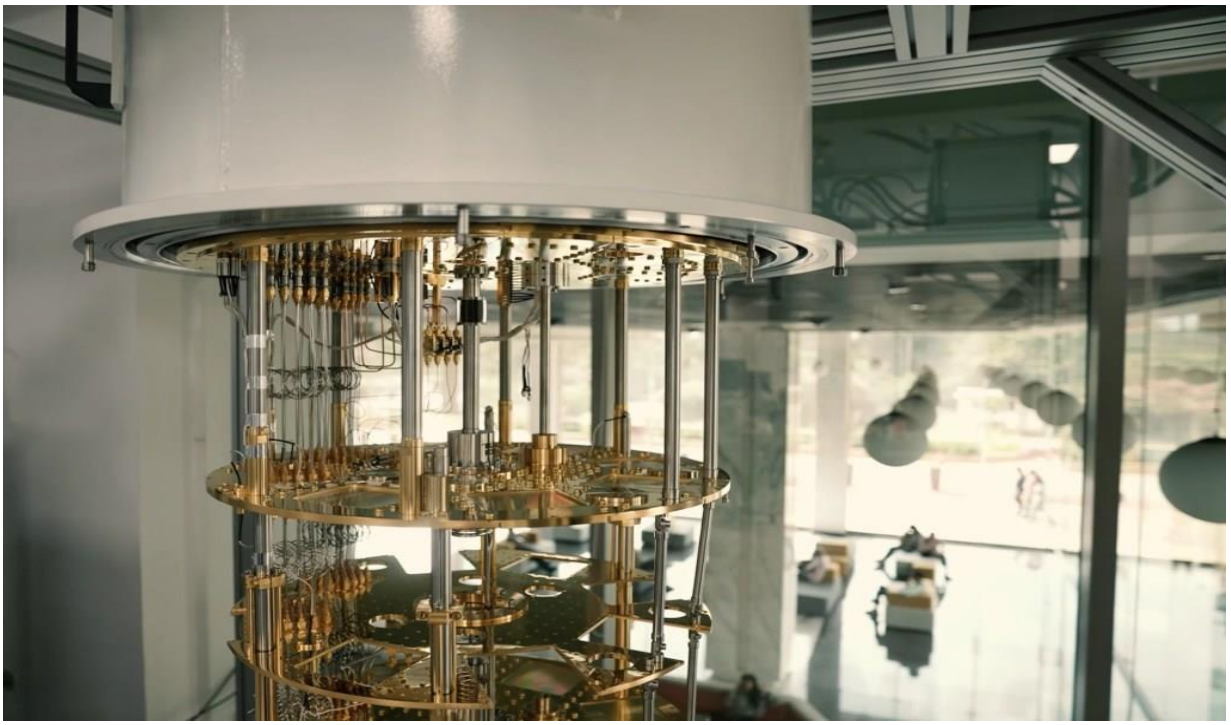
Harvard Scientists Unveil Tiny Ring Laser With Giant Potential

- Scientists from the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS), in collaboration with the Vienna University of Technology (TU Wien), have developed a groundbreaking semiconductor laser that offers broad and precise wavelength tuning in a compact, chip-sized format. This new laser design brings together the most effective features of today's leading laser technologies.

- Tunable lasers, which allow users to adjust and control the color (wavelength) of the light they produce, are essential in a wide range of fields. These include fast data transmission in telecommunications, advanced medical testing, and the detection of leaks in gas pipelines. However, current laser systems often involve compromises. Lasers with wide color ranges typically lose precision, while those that can finely tune to specific wavelengths tend to be complex and costly because they rely on mechanical components.

https://scitechdaily.com/harvard-scientists-unveil-tiny-ring-laser-with-giant-potential/

India eyes global quantum computer push — and QpiAI is its chosen vehicle



- QpiAI, an Indian startup that claims to integrate AI and quantum computing for enterprise use cases, has raised $32 million in a new funding round co-led by the Indian government as the company aims to expand its presence and develop utility-scale quantum computers for markets around the world.

- The Indian government's $750 million National Quantum Mission has co-led QpiAI's all-equity Series A round, alongside Avataar Ventures, at a post-money valuation of $162 million.

https://techcrunch.com/2025/07/16/india-eyes-global-quantum-computer-push-and-qpiai-is-its-chosen-vehicle/

How artificial intelligence is changing the way world builds computers

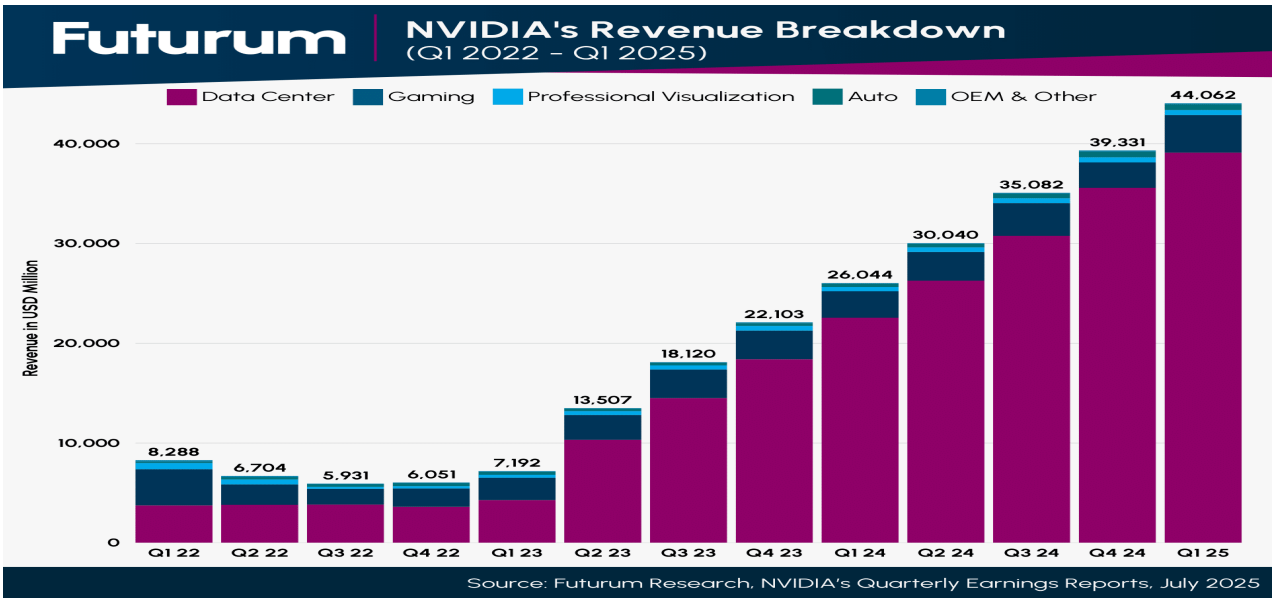
- The race to build artificial intelligence is driven by little silicon chips called graphic processing units (GPUs), which were originally created for video games. Tech companies are now packing GPUs — which are ideal for running the calculations that power artificial intelligence (AI) — as tightly as possible into specialised computers.

- The result is a new kind of supercomputer — a collection of up to 100,000 chips wired together in buildings known as data centers to hammer away at making powerful AI systems. All this computing power comes at a cost.

- OpenAI, the maker of ChatGPT, hopes to build about five facilities that would collectively consume more electricity than the roughly three million households in Massachusetts. As technology companies chase the dream of AI, these data centres are popping up across the country and around the globe, forcing tech giants to hunt for the electricity to power them and the water for cooling systems to keep the chips from frying in their own heat.

SOURCE: https://www.business-standard.com/technology/tech-news/how-artificial-intelligence-is-changing-the-way-world-builds-computers-125031701320_1.html

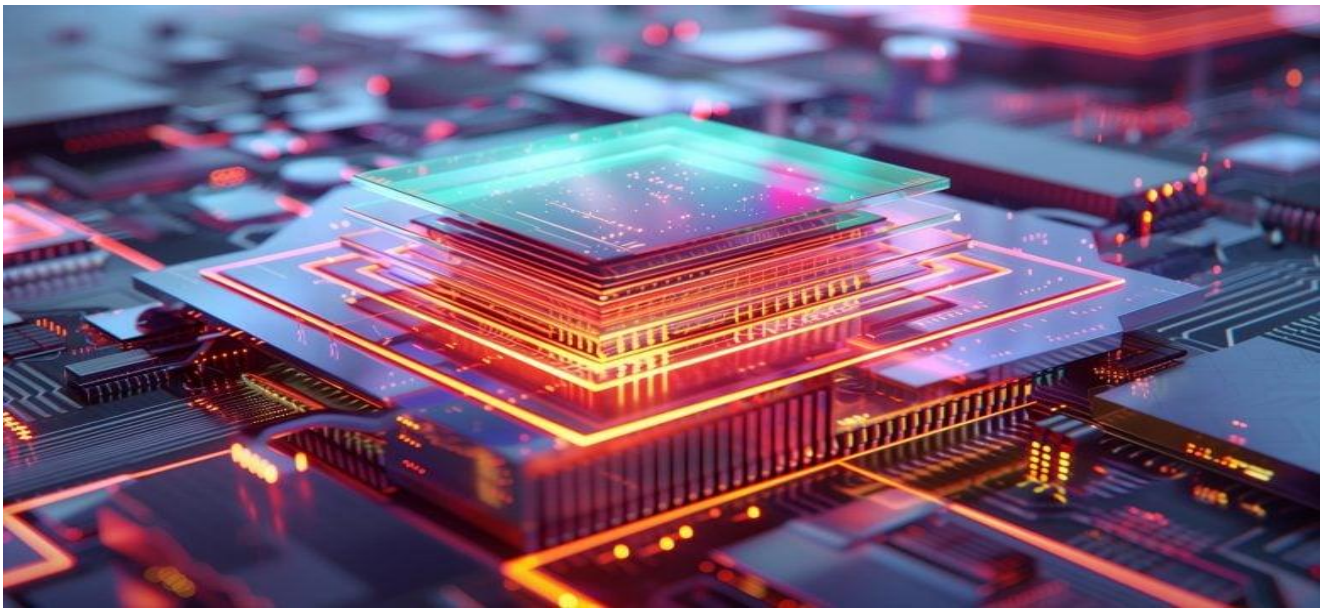
NVIDIA Becomes First to Reach $4 Trillion Market Cap — The Foundational Pillar of Accelerated Computing and AI Infrastructure



- Two and a half years ago, when NVIDIA began to be seen as a potential leader in the AI boom following the launch of OpenAI's ChatGPT-3, the idea of it reaching a $4 trillion market cap might have seemed ludicrous. Even as recently as January 2025, some doubted NVIDIA's prospects due to the emergence of DeepSeek, which offers a more cost-effective solution for developing advanced AI models. This led some even to suggest that the "AI bubble" was on the verge of bursting.
- Yet, as of today, few would question NVIDIA's dominance and future potential in the market, underscored by its consistently strong quarterly performance. From Q1 2023 to Q1 2025, the company's quarterly revenue surged more than sixfold from $7.1 billion to $44 billion. Notably, its data center revenue grew nine times during the same period, reaching $39.1 billion in Q2 2025, up from $4.2 billion in Q1 2023. A global wave of data center buildouts and robust computer demand has fueled this growth. While the pre-training of large AI models largely drove the initial surge, the past year has seen an accelerating shift toward increasingly complex reasoning models, which require significantly more compute for inference

Source: https://futurumgroup.com/press-release/nvidia-becomes-first-to-reach-4-trillion-market-cap/

Researchers Solve Long-Standing Magnetic Problem With Atom-Thin Semiconductor



- A recent scientific breakthrough has unveiled a promising new technique for manipulating magnetism in ultra-thin materials, potentially paving the way for faster, more compact, and energy-efficient technologies.

- The method centers around a material called $CrPS_4$, which is only a few atoms thick. Researchers discovered that they can finely adjust its magnetic properties with high precision, offering a new level of control.

- This finding may help resolve a long-standing challenge in material science and could open the door to innovative magnetic technologies, including advanced memory storage and future electronic devices.

- Magnetism plays a key role in how digital memory operates. Within computers, tiny magnetic regions are responsible for storing data

Source: https://scitechdaily.com/researchers-solve-long-standing-magnetic-problem-with-atom-thin-semiconductor/