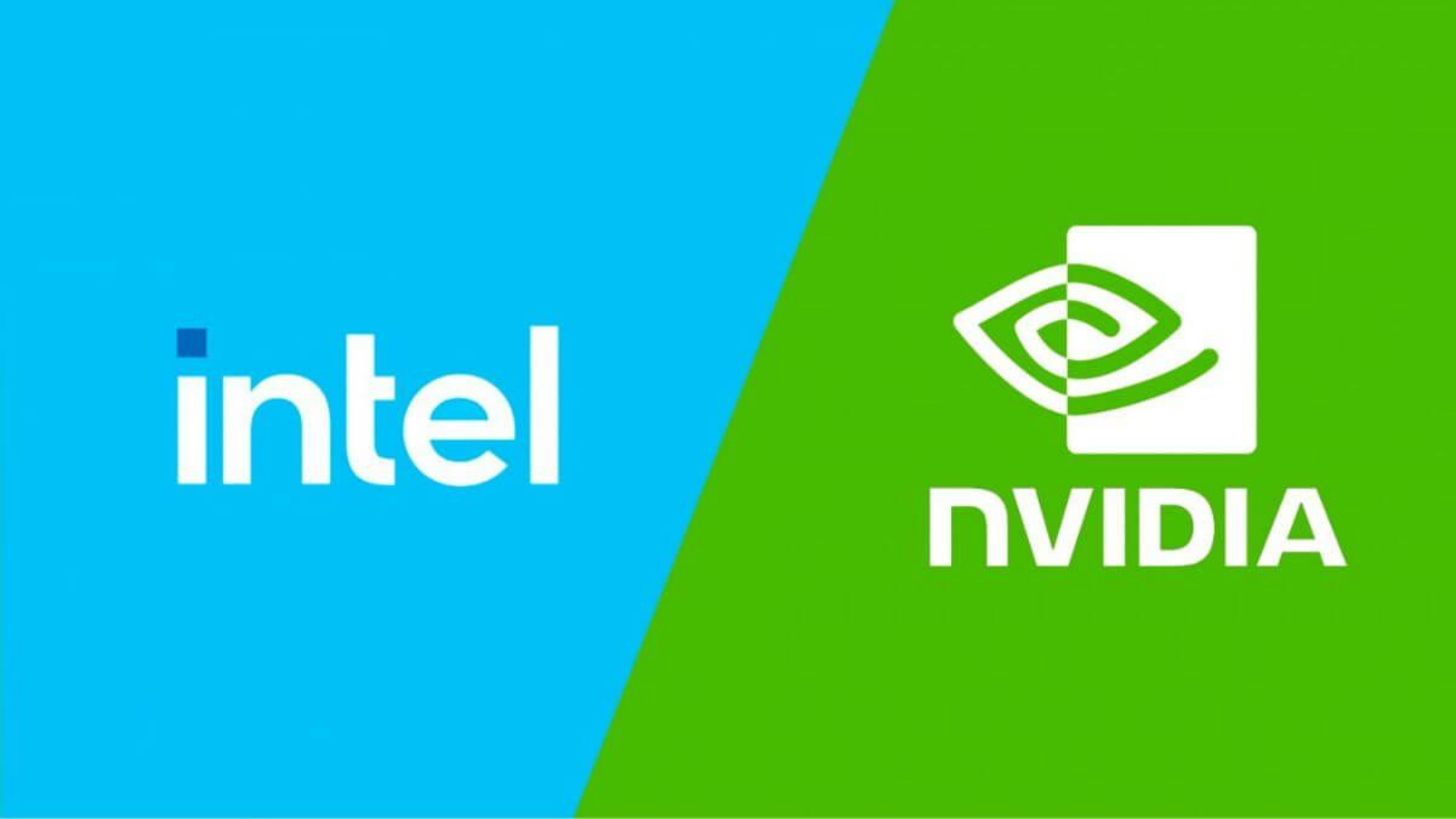

intel
NVIDIA

Business Case Study
of
INTEL vs NVIDIA, THE CHIP WAR

By
Oishik Biswas

Intel & Nvidia

- Nvidia stock price rising by 113%.
- Intel stock price gone down by 29%.
- 1971, Intel mastered the microprocessor.
- Microprocessor is revolutionary because it took all those big expensive parts of a computer and shrunk them down to a tiny piece of silicon as small as your fingernail.
- From big, heavy, low processing devices to small, compact, super powerful microprocessors.

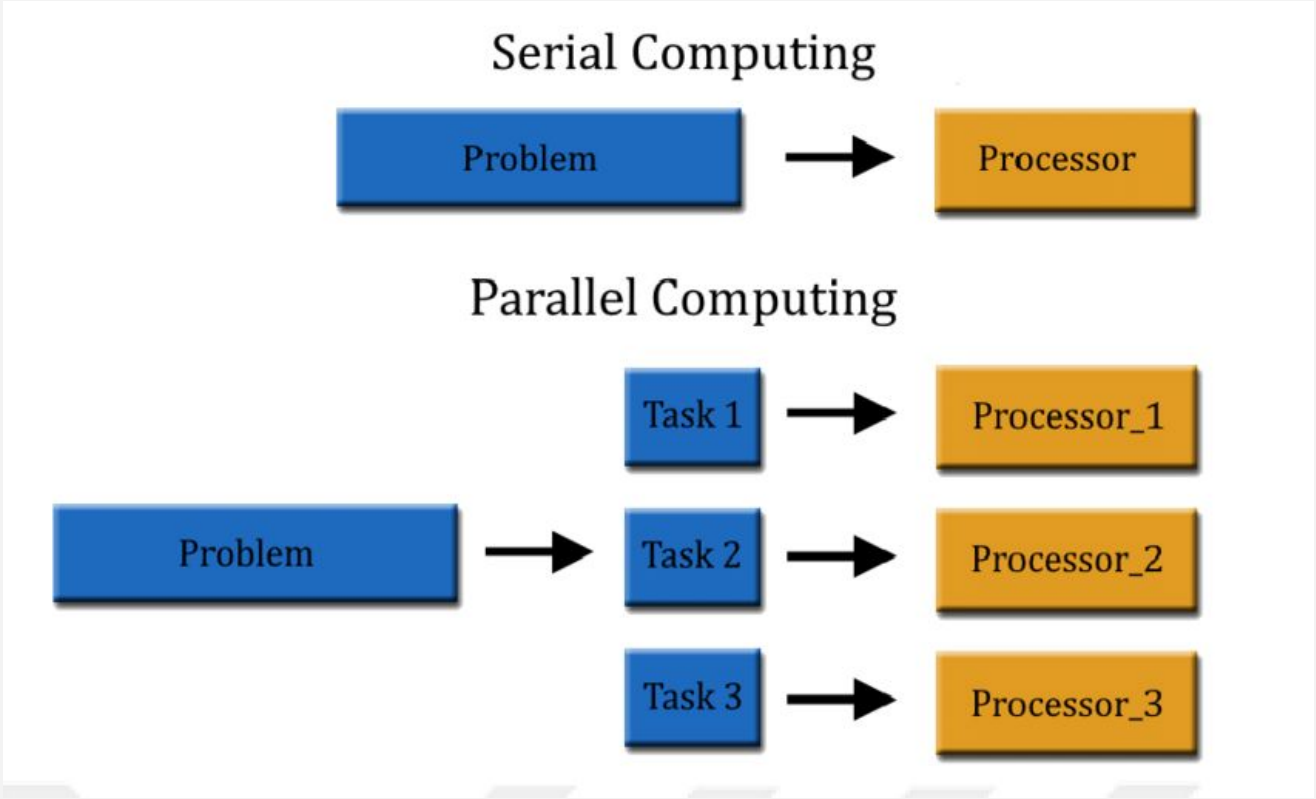
Intel & Nvidia

- 1993 → Intel launched an incredible brand called Pentium series.
- Windows → King of operating systems.
- Intel → Chip industry of the world.
- Share price 60 cents in 1983, $34 in 2002. (56 times increase)
- Nvidia → Graphics Processing Unit (GPU)
- Microprocessor → General Purpose Device
- GPU → Specialist device rendering graphics, texture mapping, lighting, video processing.

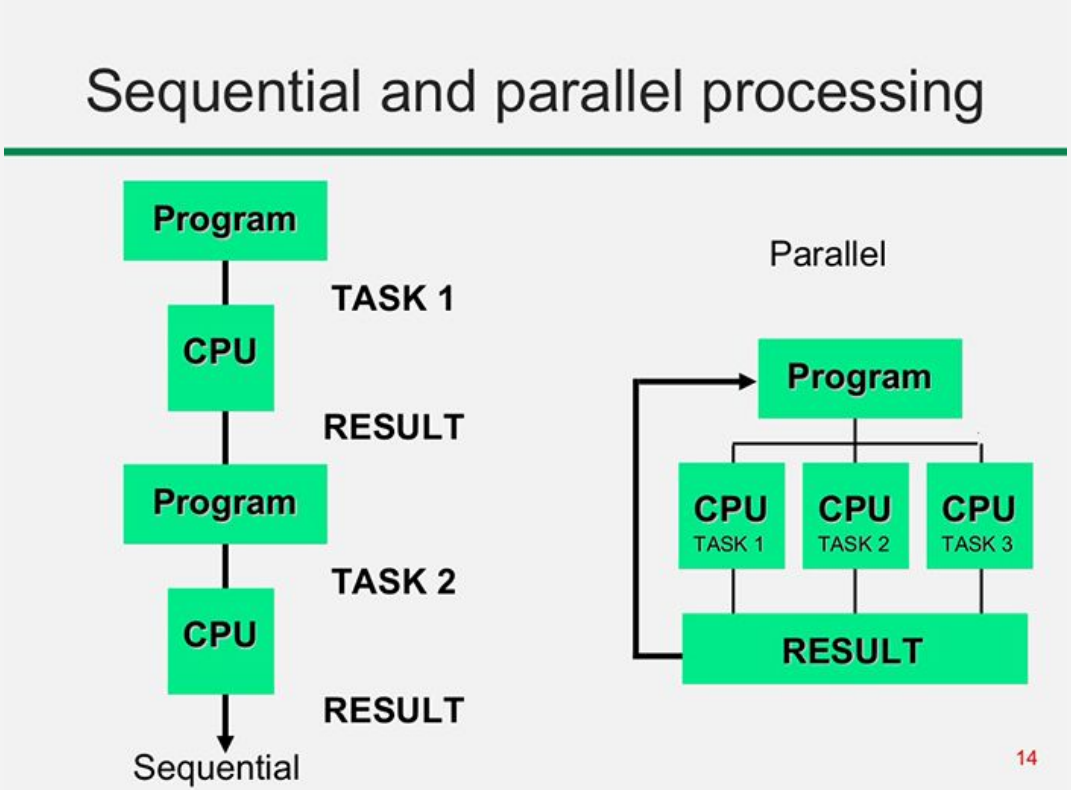
Intel & Nvidia

- GPU could do this complex tasks and could free up the processing space for the microprocessor to function more effectively.
- Nvidia Cuda mastered the parallel computing model.
- Intel mastered the sequential computing model.
- Parallel → Significantly increase computing speed.
- Process large datasets to complex calculation, video processing, 2D/3D graphics.

Sequential vs Parallel Computing



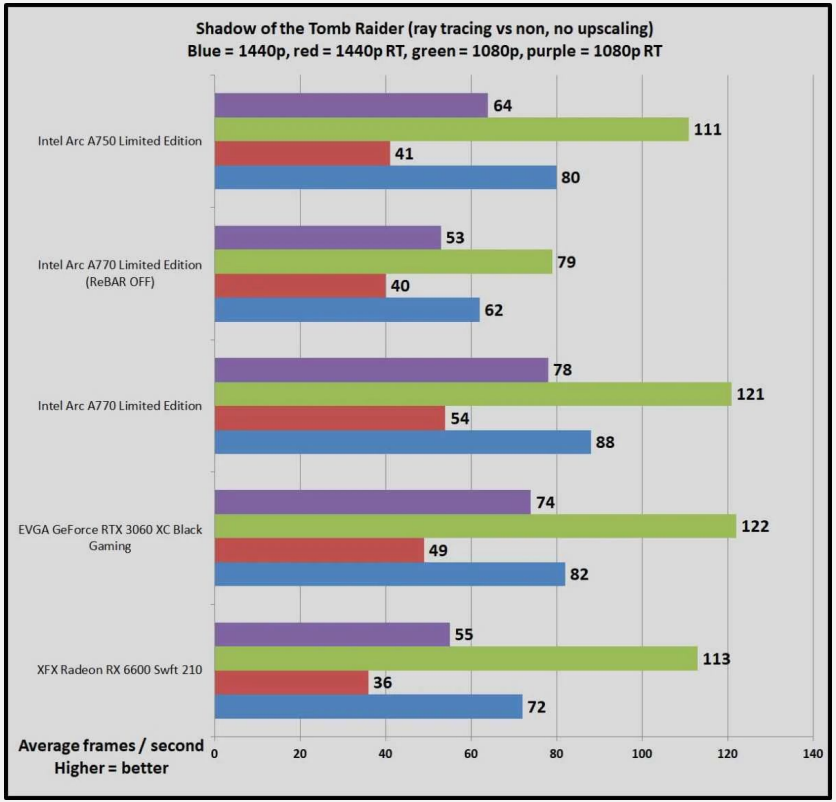
Sequential vs Parallel Computing



Intel & Nvidia

- Extended the capability of GPUs to do the tasks that the microprocessor could not do.
- Nvidia’s GPU could do whatever a microprocessor could do.
- Intel’s microprocessor could not do the complex rendering that Nvidia GPU could do.

Intel vs Nvidia Graphics Card



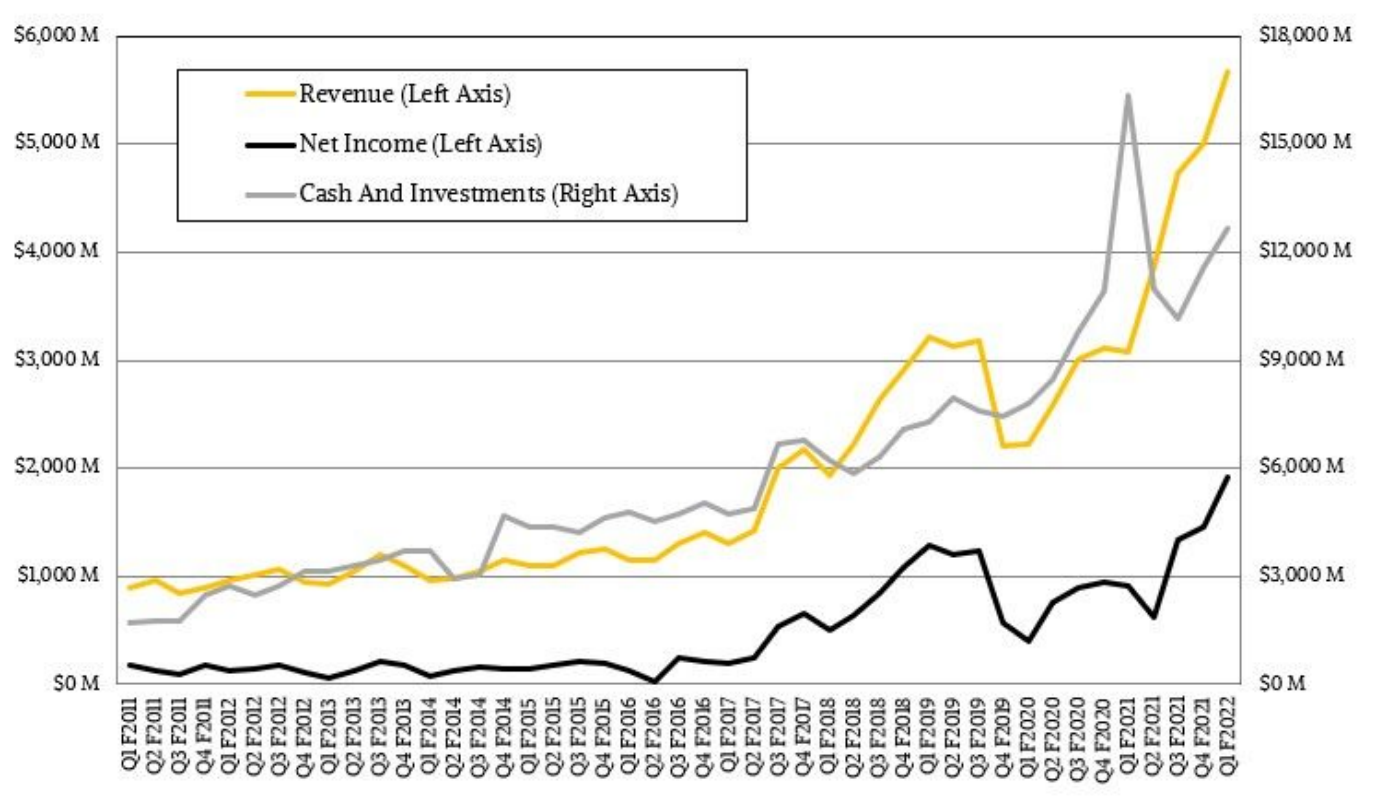
AI Wave Effect

- Nvidia GPU much more efficient tool for large scale data analysis as compared to microprocessor.
- Chip crisis during pandemic, GPU demand shot up.
- 2021 → Intel launched its graphics card as a direct competitor of GPU.
- With crypto boom, Nvidia saw an unexpected surge in the cryptocurrency sector, go to GPU for digital miners. Even the crypto wave subsided, the AI wave came along.

AI Wave Effect

- Nvidia launches new GPU and services for generative AI interfacing.
- Better memory, more cares, better connectivity.
- Nvidia held a stunning 80% market share in the AI processor market, 95% market share in the GPU market.

AI Wave in Nvidia



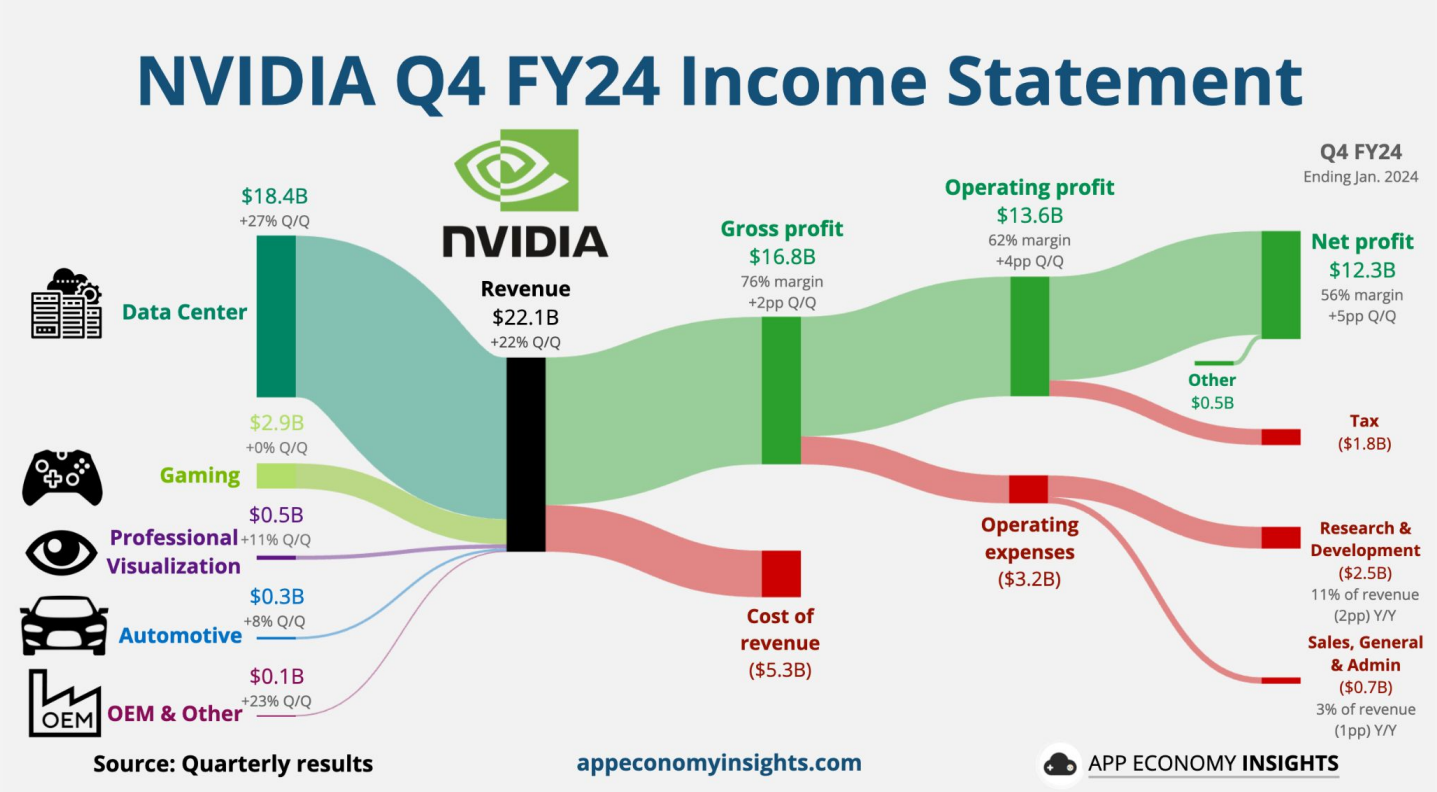
Nvidia Revolution

- Nvidia became the backbone of Chatgpt supercomputer with a staggering 10000 GPUs.
- Stole the spotlight of all other companies.
- 2022 → Nvidia came out with a very powerful processor called H100 units, has 80 billion transistors.
- High demand to be used by big cloud companies like Microsoft, Amazon and Google.

Nvidia Revolution

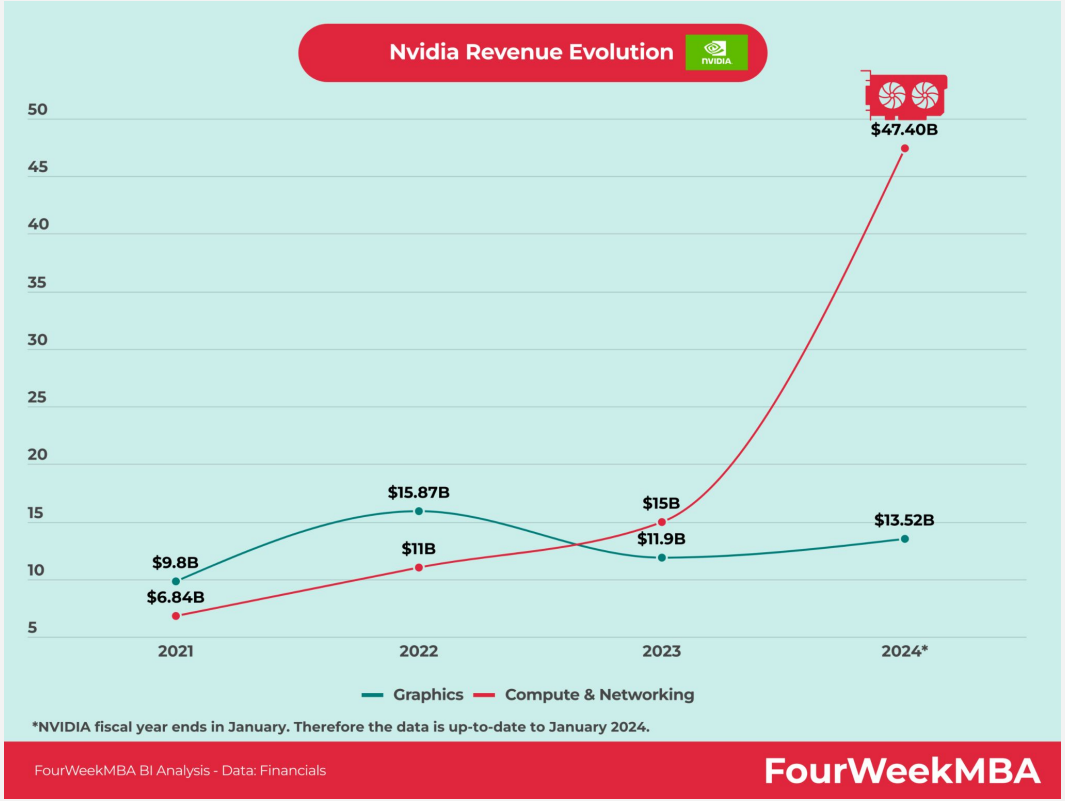
- Nvidia expects to make 11 billion USD from sales over the next three months.
- First creating a blue ocean for itself in the GPU space by mastering the advanced computer model of parallel processing, then by using this model as a barrier to entry to enter Intel’s fort, lastly by being at the forefront of the Ai and cloud revolution.
- Nvidia has emerged as the winner of this round of the chip wars.

Nvidia Revenue Breakdown

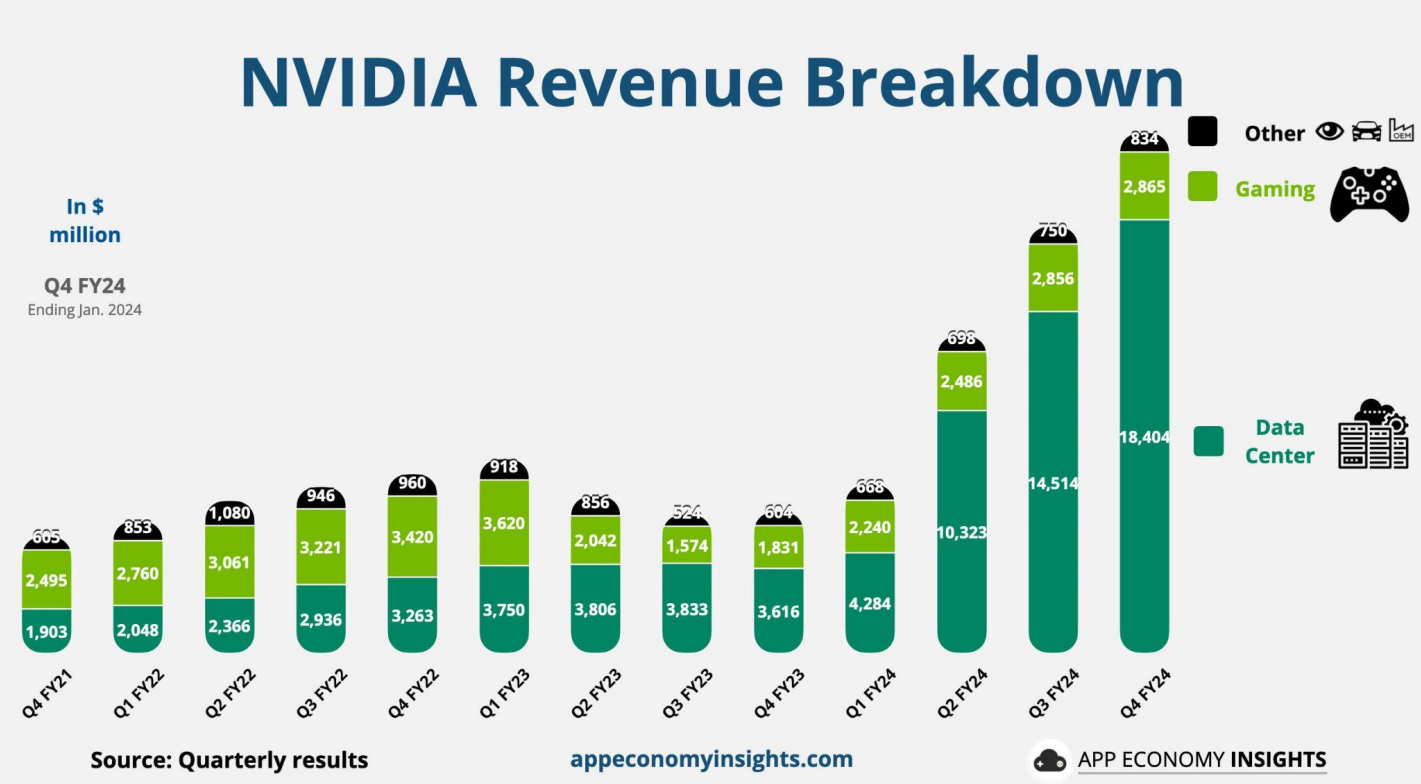


Nvidia Revenue

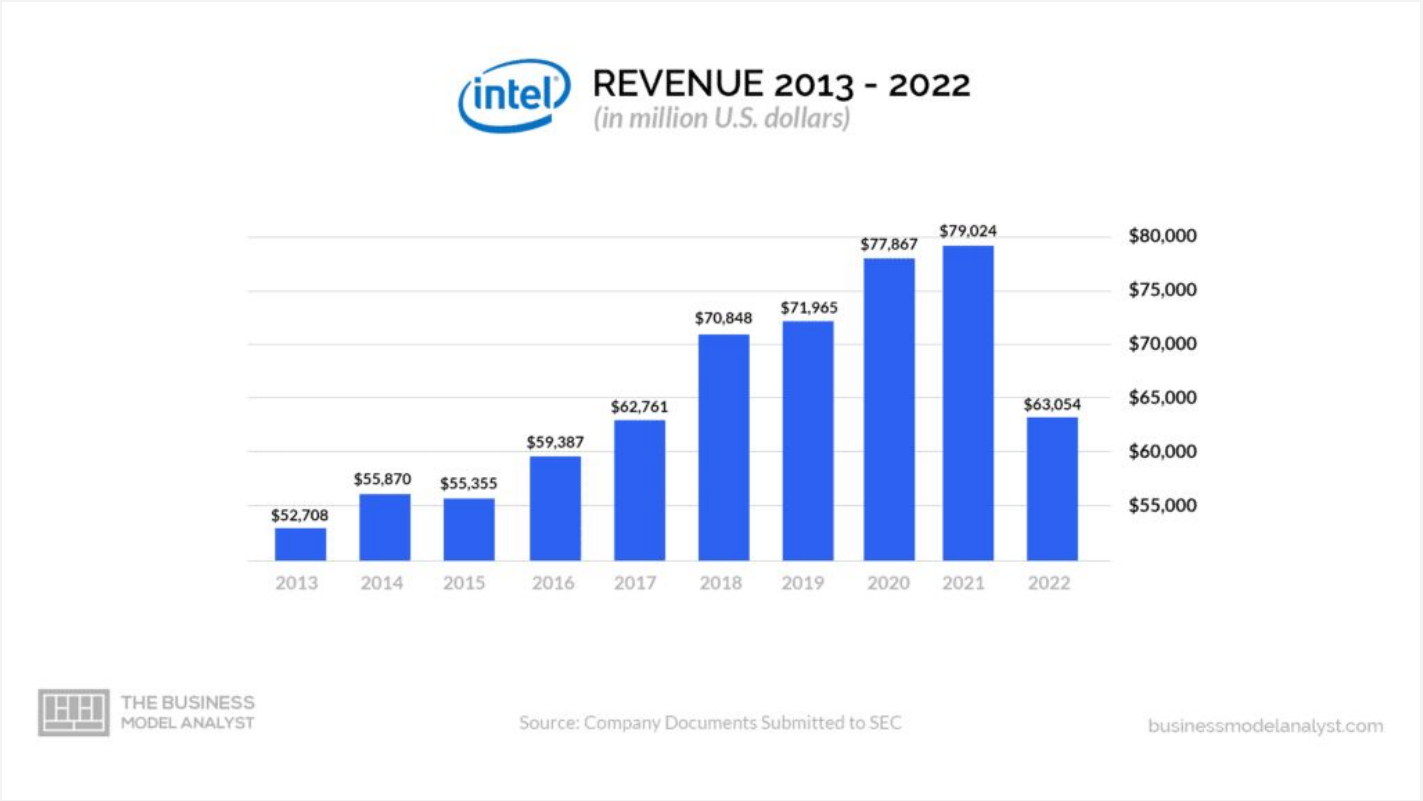
Nvidia Revenue



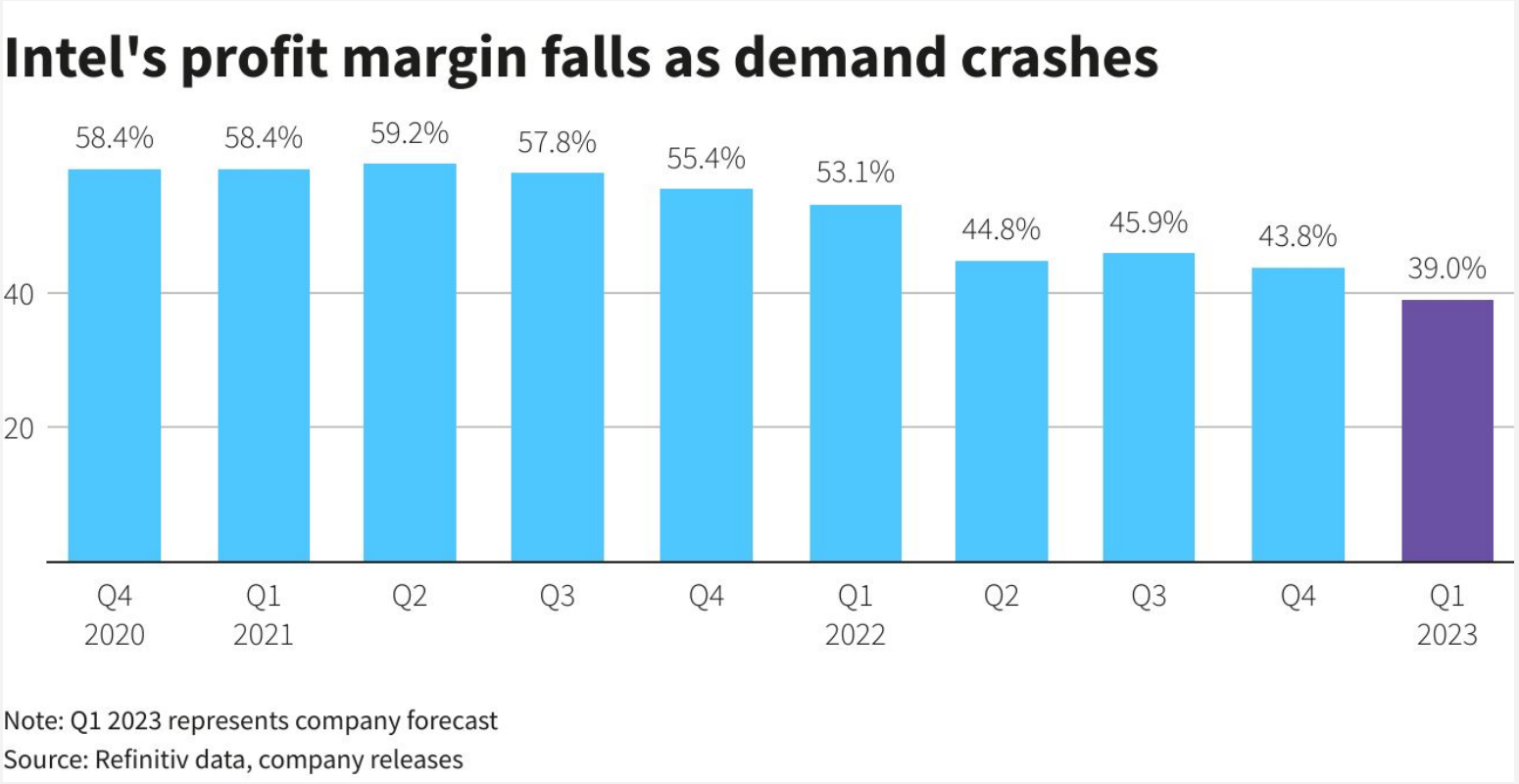
Nvidia Revenue



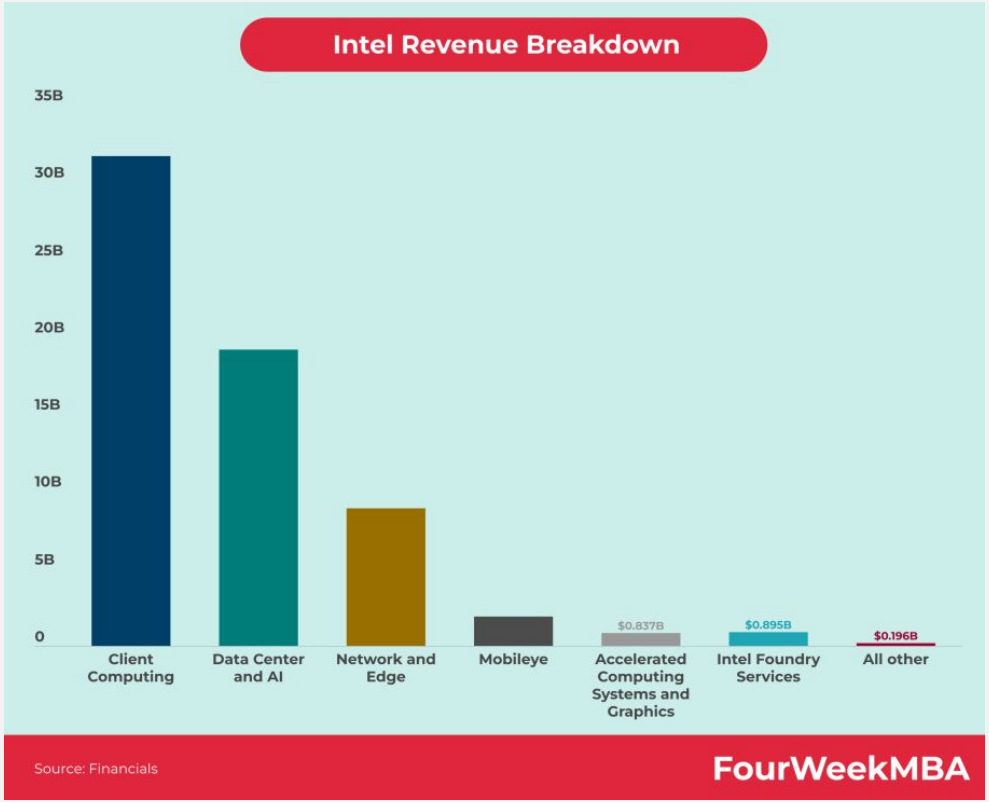
Intel Revenue



Intel Profit Decreases



Intel Revenue Breakdown



CPU vs GPU

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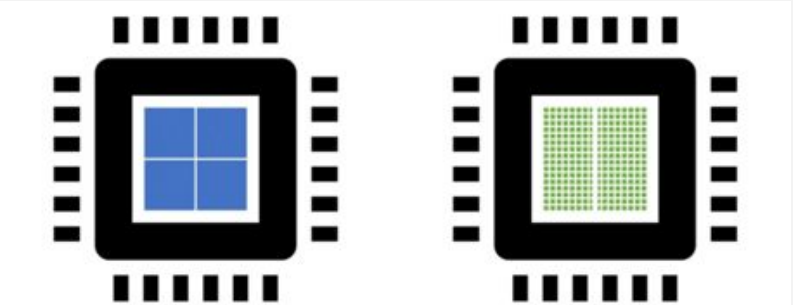
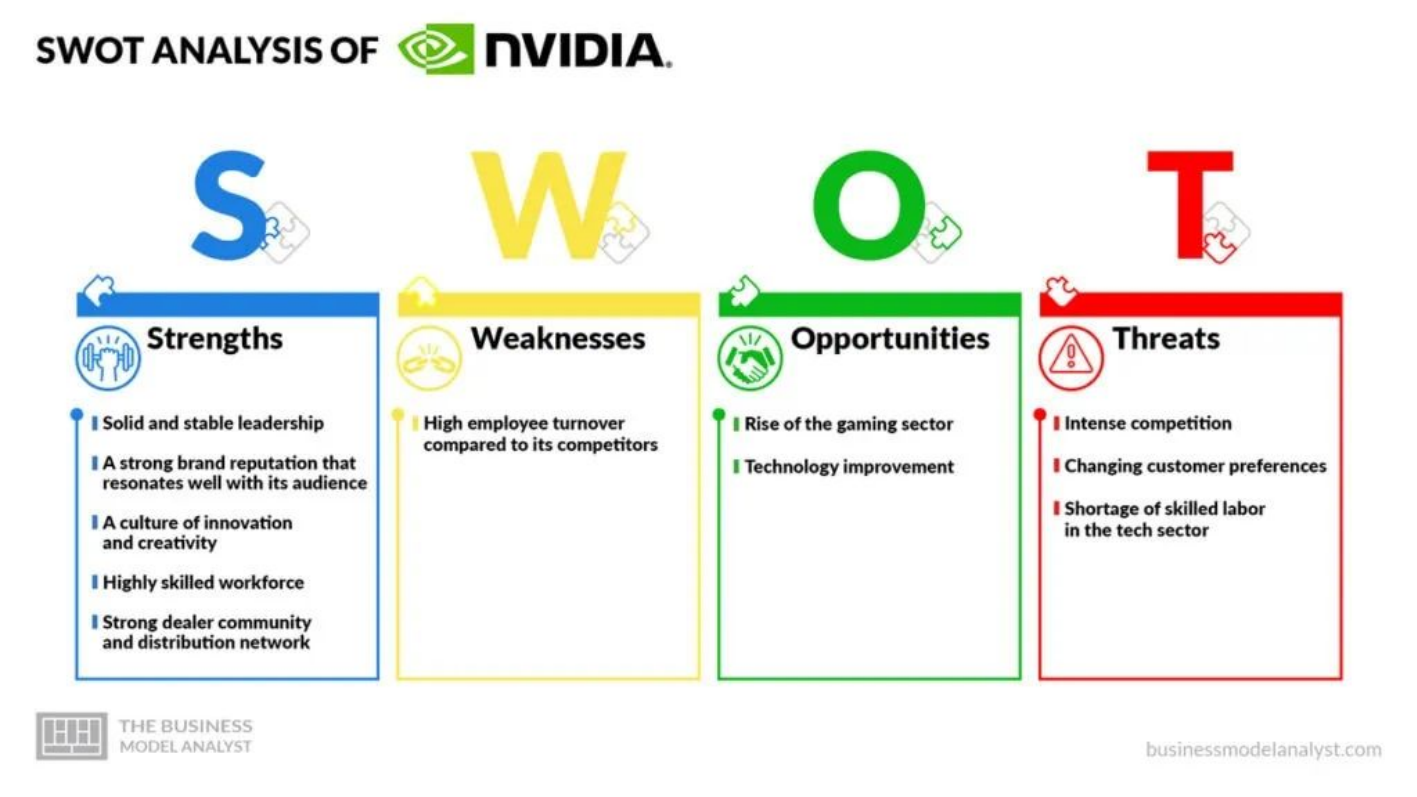
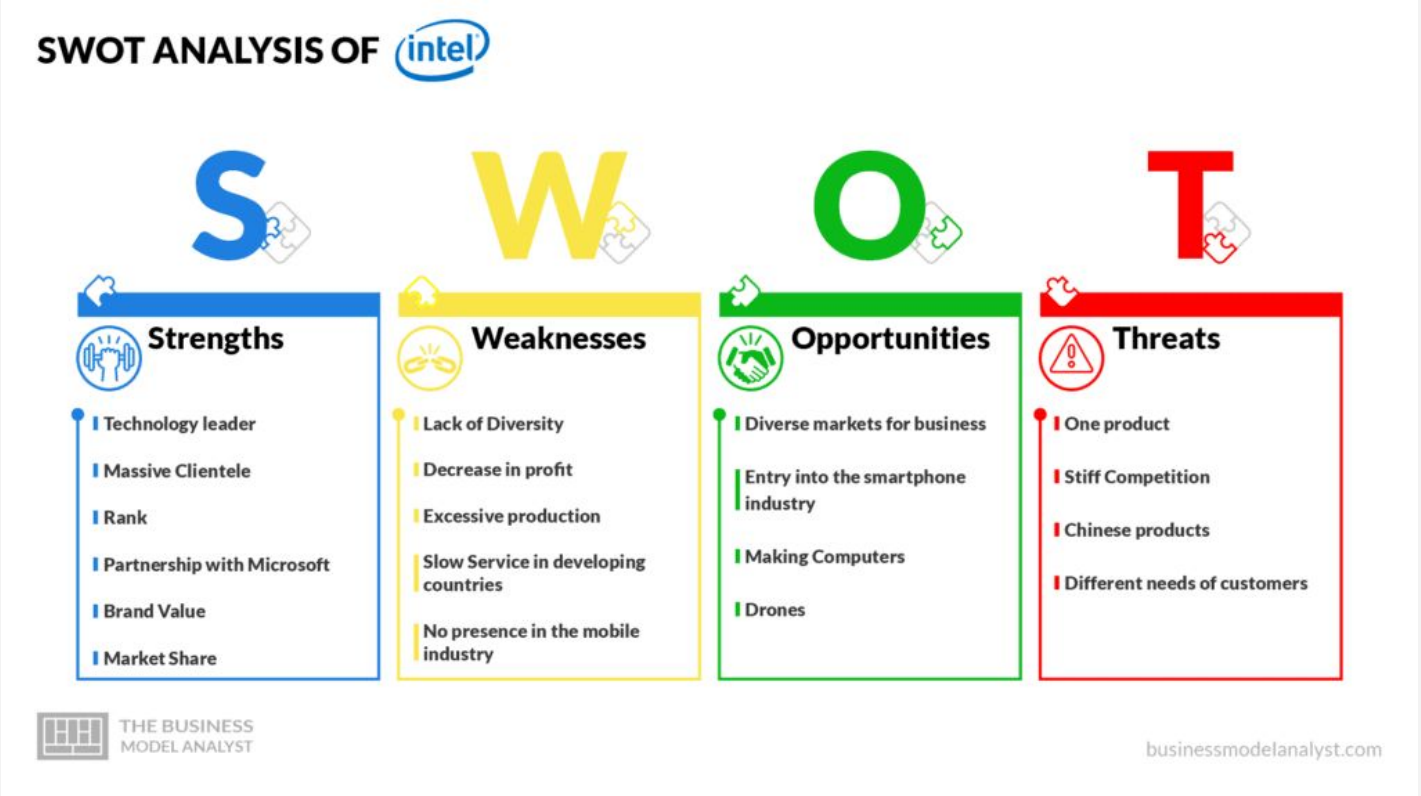


CPU	GPU
Central Processing Unit	Graphics Processing Unit
4-8 Cores	100s or 1000s of Cores
Low Latency	High Throughput
Good for Serial Processing	Good for Parallel Processing
Quickly Process Tasks That Require Interactivity	Breaks Jobs Into Separate Tasks To Process Simultaneously
Traditional Programming Are Written For CPU Sequential Execution	Requires Additional Software To Convert CPU Functions to GPU Functions for Parallel Execution

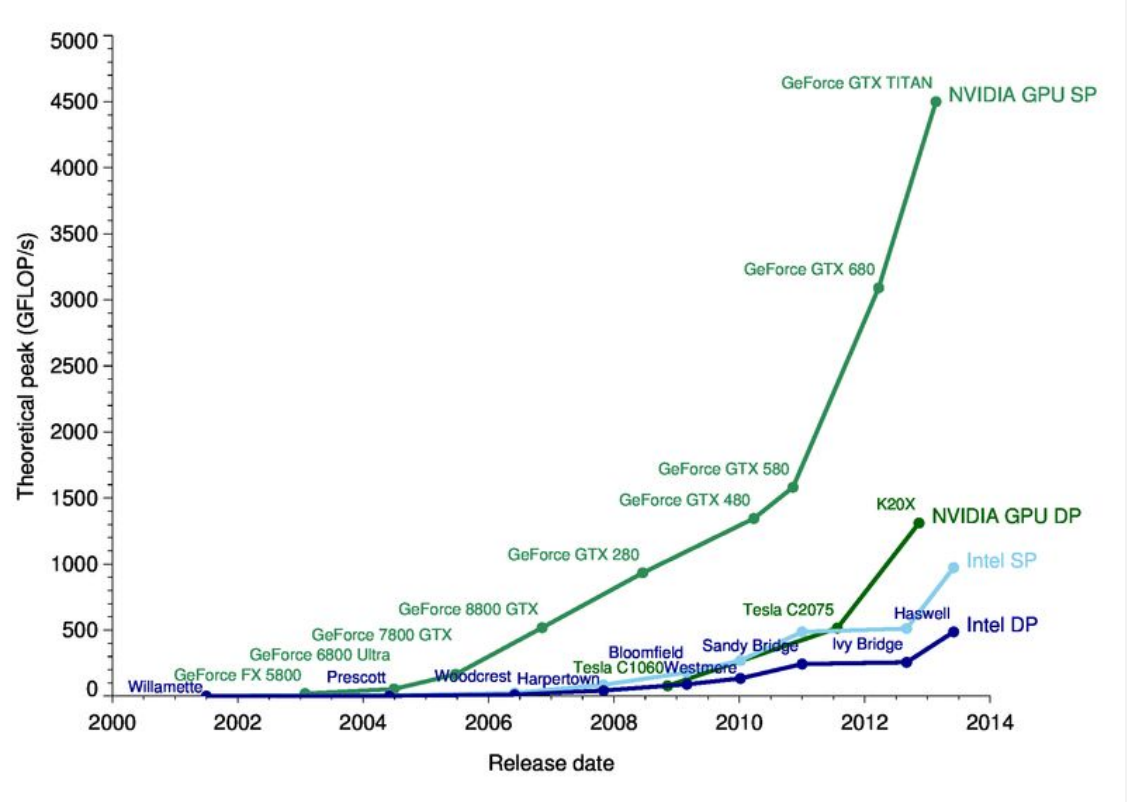
Nvidia SWOT Analysis



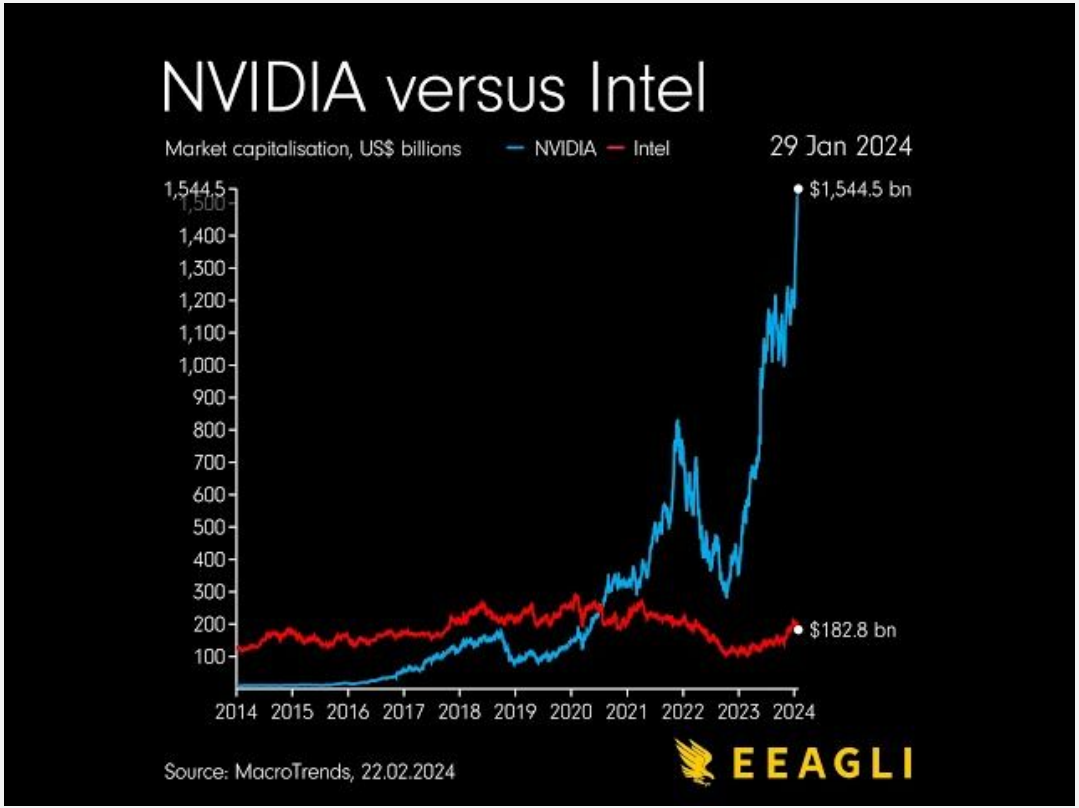
Intel SWOT Analysis



Nvidia vs Intel

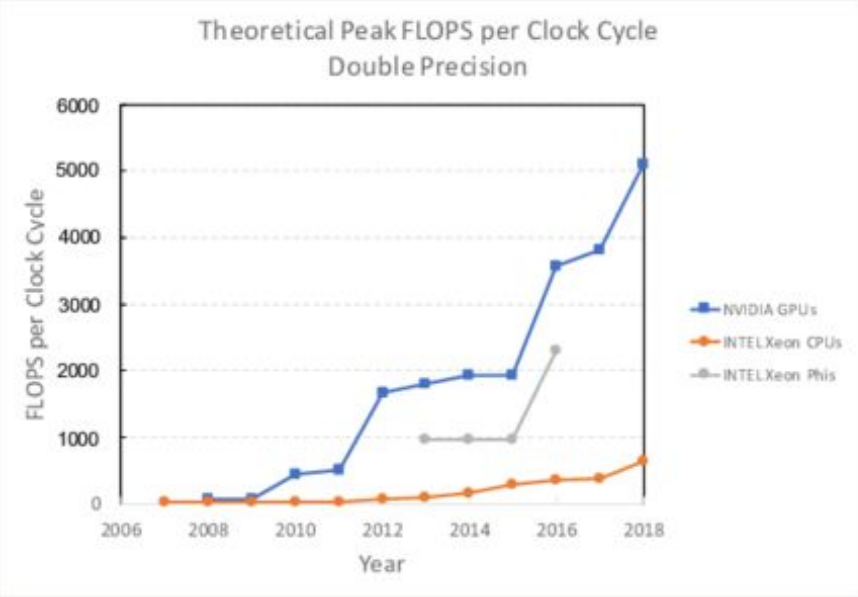


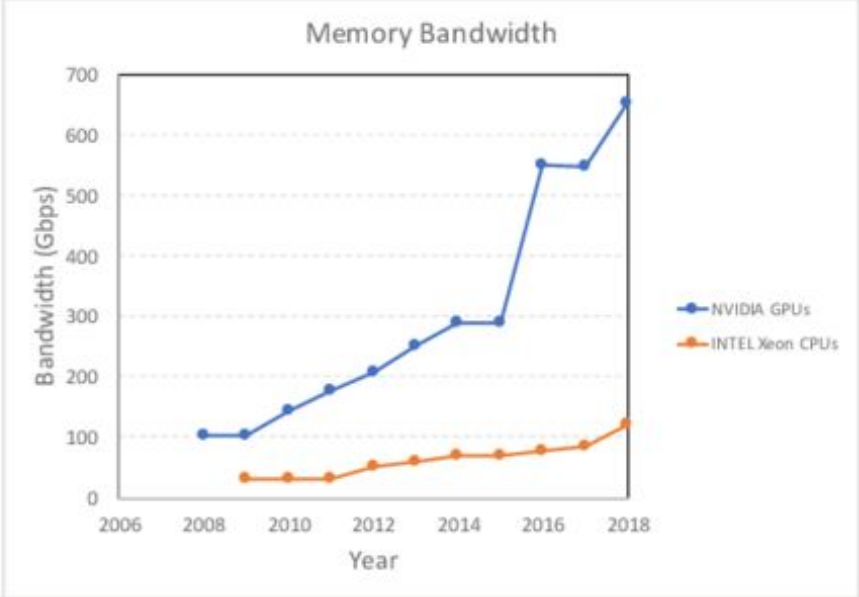
Nvidia vs Intel Market Capitalisation



Nvidia vs Intel Market Cap

Nvidia vs Intel Performance Index





Business Lessons

- Instead of wrestling in crowded waters, try to be the lone sailor in the untamed seas.
- Don’t just solve problems, try to eliminate them from altogether, ability to solve the problem of the inefficiency of sequential process.
- Always catch the next wave before it crushes.
- GPU capabilities perfectly positioned to ride the AI & Data Science wave.