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How does the human brain compare to a computer?



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We live in a world where computers can outperform humans at chess, Go, and even Jeopardy. Artificial intelligence and machine learning are creating new breakthroughs all the time, leaving us wondering whether we'll soon be living in a technological utopia or battling for survival

cyborg Arnold Schwarzenegger

against a

But do computers outperform the human brain overall? Let's find out.

For the purpose of this article, let's define a computer as a personal desktop for non-professional use (i.e. not a server running 24/7).

And to keep things simple, we'll limit the comparisons to four areas:

- Storage
- Processing speed
- Memory
- Energy efficiency

Let the battle begin!

Storage

For day-to-day usage, most computer users will get by with 500GB of storage. Creatives, gamers, and other data-heavy users will often rely on additional storage on the cloud or on a portable SSD. For the sake of argument, we'll give the computer an average of 1TB of storage space.

What about the brain's storage capacity? Well, it's complicated.

Estimates vary on how many nerve cells, or neurons, exist in a typical brain. Many studies rely on 100 billion neurons, while a

Stanford University study

estimates that the brain actually has 200 billion neurons.

You might be thinking, “Wait, the computer has bytes and the brain has neurons. How do we compare the two?”

One marked difference between the human brain and computer flash memory.

is the ability of neurons to combine with one another to assist with the creation and storage of memories. Each neuron has roughly a thousand connections to other neurons. With over a trillion connections in an average human brain, this overlap effect creates an exponentially larger storage capacity.

Based on our understanding of neurons today, which is very limited, we would estimate the brain’s storage capacity at 1 petabyte, which would be the equivalent of over a thousand 1TB SSDs.

Advantage: Human Brain.

Memory

So far, it’s an even contest. The human brain has significantly more storage than an average computer. And a computer can process information exponentially faster than a human brain.

How about accessing memory? Can a human recall information better than a computer?

Well, it depends on what kinds of information we’re talking about.

For basic facts, the answer is unequivocally no. If a computer “knows” that the capital of Nevada is Carson City, that fact will always be accessible. A human, on the other hand, may get confused or forget that fact over time, particularly after a long weekend in Vegas.

Where computers lag behind humans is the ability to assign qualitative rankings to information. For a computer, all information is exactly the same. Humans, on the other hand, have many different types of memories and prioritize memories based on their importance. You will

undoubtedly remember numerous details about your wedding day, but you probably forgot what you had for lunch last Thursday. (It was a tuna sandwich on rye, in case you were wondering.)

Humans also relate memories to one another, so your memory of New Year's Eve will tie to all of your other New Year celebrations over the course of your life. A computer lacks this ability, at least for now.

Advantage: Unclear

Energy Efficiency

The contest is still a toss-up. Computers are faster and more precise, while humans have more storage capacity and nuance in accessing memories.

What about energy efficiency? Here is where it gets really fun.

A typical computer runs on about 100 watts of power. A human brain, on the other hand, requires roughly 10 watts. That's right, your brain is ten times more energy-efficient than a computer. The brain requires less power than a lightbulb

We may not be the brightest bulbs in the box, but then again, we don't have to be.

Advantage: Human Brain

Conclusion

Ultimately, there is no clear winner overall. Human beings and computers have their own advantages, depending on the category. If you want precision and raw processing speed, a computer is the clear choice. If you want creativity, energy efficiency, and prioritization, a human is your best bet.

The good news is that we don't have to choose. It doesn't have to be a contest of humans against computers. We can work together and enjoy the best of both worlds. That is, until **Skynet becomes self-aware**

Tags: **Technology(/blog/dynamic-card-blog-filtering)**, **Kris Sharma(/blog/dynamic-card-blog-filtering)**

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