Ethan Daugherty

SNHU

CS-370-H5862 Current/Emerging Trends in CS

2-1 Discussion: Human Brains and Neural Networks

05/15/2020

Discussion: Human Brains and Neural Networks

* Compare and contrast neural networks with their biological equivalent. Be sure to consider both the function and structure at the level of a single neuron and that of the entire network.
* What are some of the differences between how humans and machines learn?

Hi Peers! Neural networks are a type of machine learning that mimics the way neurons in a brain communicate their biological equivalent. A brain communicates by sending signals between neurons via pathways connecting them. A big difference between the two is how they interpret data. A brain can take a variety of different information unstructured and interpret it to make sense. A artificial neural network on the other hand requires data to be structured and formatted within tolerance to make sense of the information and return data. Additionally, the brain requires a lot less power to run, According to Pavan Vadapalli (2021),

“The brain requires about 20% of all the human body’s energy, equivalent to about 20 watts, which is exceptionally efficient. But computers need an enormous amount of computational power to solve the same problem, and they also generate a lot of heat during computation.”

Meaning that neural networks are requiring a computer to run on to begin with require an enormous amount of power.

Humans can learn in a variety of different ways, weather you’re being taught or learning from experience the idea is one’s ability to recall something and produce results. Machine learning is similar to this process with the idea being to take information learned and return results based on what has been done in the past. The brain can take a variety of different information and create a response to it while a neural network would require the data to be somewhat structured to return learned information, additionally while humans learn in a variety of way, machine learning also can interpret information in a variety of ways via supervised, semi supervised, and unsupervised learning. With each having their merits, I find it similar to the way that a brain can interpret information. With supervised learning when the data is labeled and sorted like being taught the information directly, while semi-supervised being similar to being both taught and learning directly from a textbook or experience, and unsupervised being similar to either learning from a book directly or just experiencing the material firsthand.

# References

Delua, J. (2021, March 12). *IBM.com*. Retrieved from Supervised vs. Unsupervised Learning: What’s the Difference?: https://www.ibm.com/cloud/blog/supervised-vs-unsupervised-learning

Vadapalli, P. (2021, Feburary 09). *UpGrad*. Retrieved from Biological Neural Network: Importance, Components & Comparison: https://www.upgrad.com/blog/biological-neural-network