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ISM 1

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Research Assessment #5

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Subject: Deep Learning/Neural Networks basic theory

MLA citation(s):

Vilata, Jose Blas. "What Is Deep Learning: Case Study in EDICOM (Part I)." *Edicom Careers*, Edicom Careers, 9 Apr. 2021, https://careers.edicomgroup.com/what-is-deep-learning-case-study-in-edicom-part-i/.

Assessment:

Since my past few research assessments as well as some of my past blogs, I have really developed an interest in the theory behind neural networks/deep learning. Thus, I researched and found the article about neural networks, "What is deep learning: case study in EDICOM (Part I)." This article helped me learn about the basic concept of the neural network algorithm that a machine learning beginner should learn and understand to explore the field of deep learning.

After reading the article and understanding the information about neural networks and how they really work through the use of layers, neurons, and activation functions, I learned about what really happens in the process when a neural network is used in a supervised learning model. Furthemore, I was able to learn about a process called forward propagation where each layer that consists of neurons, units that each perform one computation, are connected to previous neurons and takes inputs of weights, biases, and computed data to calculate the next output and feed it to

the next layer's neurons (Vilata 6). But, although layers are fundamental in neural networks, I learned that they would still perform like linear models against non-linear data without activation functions (Vilata 10). Activation functions are functions that introduce curves to the data and move away from linear patterns (Vilata 11). This information connects to my knowledge of the ReLU function (Rectified linear unit) that is the most common example of an activation function that simplifies the data into more non-linear terms. Moreover, the article also connects to my already known information of supervised learning as I already know fundamental concepts such as epochs, batches, learning rates, loss function, optimizer that all help the neural network learn. Now, I want to deep dive into the mathematical sense and the exact programming sense that these algorithms require as I have finally learned about the basic sense of a neural network.. After reading the article, which was just part 1 of the entire case study of a specific practical application of a neural network, I still want to learn more on how they implemented this network to solve their business problems. Going back to the neural network algorithms, I still wonder what the mathematical rules or derivations are that lead to such models who can predict so greatly with such an algorithm.

I continue to strive to learn about neural networks by studying several case studies such as the one this article presents as I can help my understanding as well as practice of deep learning which will be key to my original work. With this basic underlying knowledge about neural networks, I now have a clear visión of what I need to accomplish over the next few weeks to get more involved in the practical implementations of deep learning. My goal for the next few weeks is to understand neural networks through the use of books, courses, and online articles, as I am truly interested and intrigued by the process and logic behind these algorithms. This will allow

me to achieve my goal of successfully implementing machine learning, more specifically deep learning into real life applications in the future.