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Reflective Journal

Based on the workshop about the chihuahua and the muffin, I was running the cells to help teach the machine to learn to distinguish these two concepts visually. My main objectives were to teach the machine to distinguish how a muffin looked and how a chihuahua looked by learning about the pixels each picture in each category contained. Also, I needed to learn how to do this by trial and error meaning I, with a little bit of guidance, had to run the cell and make sure there was no error. This ultimately allowed for the machine to learn what I wanted it to learn and produce as an output. The main objective was to ultimately run through all the cells successfully and have the machine learn what a chihuahua was and what a muffin was and have a good success rate. Of course, as time is invested to teaching a machine to learn a concept, the percentage gradually increases as you are made aware of what works better to teaching and showing your machine.

In this activity, I was able to become more aware of the key concepts that were needed to successfully train my machine. This includes image classification, convolutional neural networks, and transfer learning. Image classification is used to distinguish the difference between two or more concepts and in this case images of muffins and chihuahuas. The images that were fed into the machine was information to get the machine started to learn the type of pixels that made up that certain photo based on its classification. Classification predicts a label and in this case the two examples given to predict if it is a muffin or chihuahua. Convolutional neural network identifies objects in images. In this case the machine was trying to identify the difference between the two concepts for example the eyes and the nose on the chihuahua and the blueberries on the muffin. These are small details that grow the concepts apart and result if successful having a good success rate. I had to take into consideration that for the machine to learn it needed more than twenty picture to be able to identify differences because to the machine these two concepts look similar. I needed the machine to focus on the differences rather than the similarities in the images provided. Transfer learning was also incorporated into this workshop because I cloned the repository provided which was a git clone of the chihuahua and muffin. This means the cloned github data set was transferred into my jupyter notebook with the dataset alongside with it. This basically transferred learning from one model to another. Knowledge was already included in the dataset transferred so I just had to apply it to the machine the correct way to receive an accurate output.

Exploring this workshop, I did indeed encounter a handful of problems but more like challenges. While I was reading and running my cells the very first time I though it was going to be a breeze everything already written but that is when I realized not everything was fully written in detail like the machine needed. For example, the first cell I ran was not successful because the modules were not found so I had to go back and command pip to install matplotlib, torch, and torchvision. This is something easy to remember but at the time I was a little confused because I did not realize I need to be adding new cells or even correcting existing cells. This threw me off a little but the thought came to me which was good sooner than later. I was trying to read very carefully because I knew the writing that had the main idea leading me into the next cell were instructions. For some cells it asked for the height and width which I needed to replace the current question mark it came with or it would give me a syntax error or it was unable to define. Unfortunately, I do have to admit I was reading too carefully and overthinking what needed to be solved or added in to cell that on studio lab sage maker, I did run out of time and of course I did not respectfully manage my time. This means I did not successfully complete my notebook because

of lack of time management and focus. Originally I was going to continue in google colab until different error started popping off compared to the sage maker. The clone of github was unsuccessful giving me other error.

Ultimately, machine learning is a like a game that takes practice to have a decent success rate. Image classification allows for the machine learning process to be easier to know what is right from wrong. It is identifying the inputs through the neuron network which works similarly to our brain except in a computational model. The label that needs to be identified is what the machine is learning to categorize and in this example a chihuahua or a muffin. In the real-world this can be used in healthcare for example in medical imaging it can be used to efficiently detect diseases. This happens by distinguishing what is a healthy host versus an unhealthy host. This not only helps decelerate the disease but also decrease mortality rate as a whole when people are tested. Another example would be in school because if students were tested where a machine learned to identify who did their homework, the probability of kids repeating a year would also decrease because help would be applied quickly when there is still time rather when it is too late.

Overall, learning the process through a workshop notebook was very helpful because I was able to engage one on one to teach machine learning. It is important that I as anyone that is taking AI classes to personally experiment with machine learning because this creates a better understanding of what is needed for the rate to be successful and learn from my mistakes. In the near future I do plan on managing my time more carefully to successfully completing the workshop notebook because it is time consuming which is something I did hear but never really experienced it firsthand like in this activity. This is why I strongly recommend a learning process with a one-on-one activity to engage and learn, just like a machine would too.

Works Cited

Koehrsen, Will. “Transfer Learning with Convolutional Neural Networks in PyTorch.” *Medium*, Towards Data Science, 26 Nov. 2018, towardsdatascience.com/transfer-learning-with-convolutional-neural-networks-in-pytorch-dd09190245ce.