H. Monique Rathnam

Professor McManus

ITAI 1378

Reflective Journal: L07 CNN Chihuahua or Muffin

**1. CNN Architecture:**  
   - CNN Architecture is a type of deep learning in ML. CNN allows a computer to automatically learn through coding. The machine is able to retain the information being programmed and self-train.

**2. Model Performance:**  
   - The models’ performance was almost 100% accurate. Out of 30 images of chihuahuas and muffins, only one (1) chihuahua was mislabeled as a muffin. The model worked fairly quickly as well. Most codes were finished running in less than one (1) minute, there was one that took almost five (5) but was still accurate.

**3. Comparison:**  
   - CNNs are better with feature extraction, because CNNs are designed heavily for tasks involving images they excel in comparison to traditional neural networks. Also, due to the fact that CNNs are constantly evolving as they are analyzing images and coding, the accuracy CNNs provide increases automatically and overtime. On the other hand, traditional neural networks have their advantages as well. They have more versatility and are more general purpose. They can be applied to a wide range of tasks, not just image data. They can also tend to be a bit faster due to being less complex than CNNs. As for the training, traditional neural networks are faster to train, again due to not handling as complex and data heavy problems as the CNNs.

**4. Challenges and Solutions:**   
   - During this lab I faced quite a few error messages. 90% of the time it was solved when I logged out of google collab and signed back in. However, the 10% was due to overlooking little areas where they may have been a question mark that needed to be replaced, or an indentation that did not need to be there. When I ran into problems that I could not solve on my own I would utilize Gemini and ask questions to obtain the solutions.

**5. Real-World Applications:**  
   - The first real world scenario that comes to mind is using them for x-rays, MRI’s, Cat scans, etc. After my recent broken foot, I am thankful for the detail CNN analyzation provides. It is also used in speech to text, security cameras. It is definitely something that is used in everyday life, whether people realize it or not.

**6. Ethical Considerations:**  
   - Overall I do feel like CNNs are a great asset to any field. The ethical considerations in my opinion are people not working as hard, trying to “cheat” the system by relying too heavily on machines and not accurately doing their job. At the end of the day, machines are intelligent and amazing in assisting in our everyday lives, but they do not compare to human touch, emotion, and analyzation. This is where I feel we as a people need to tread with caution, so we do not rely too much on technology and machines.

Citations:

1. **Baeldung on Convolutional vs. Regular Neural Networks**

* Baeldung. (n.d.). *Convolutional vs. regular neural networks*. Retrieved July 25, 2024, from <https://www.baeldung.com/cs/convolutional-vs-regular-nn>

1. **TechTarget on Convolutional Neural Networks**

* TechTarget. (n.d.). *Convolutional neural network (CNN)*. Retrieved July 25, 2024, from <https://www.techtarget.com/searchenterpriseai/definition/convolutional-neural-network>

1. **Levity.ai on Neural Networks**

* Levity.ai. (2021, April 21). *Neural networks: CNN, ANN, and RNN*. Retrieved July 25, 2024, from https://levity.ai/blog/neural-networks-cnn-ann-rnn#:~:text=ANNs%20(Artificial%20Neural%20Networks)%20are,proficient%20in%20Natural%20Language%20Processing.

1. **Towards Data Science on Understanding Neural Networks**

* Towards Data Science. (2018, October 5). *Understanding neural networks*. Retrieved July 25, 2024, from <https://towardsdatascience.com/understanding-neural-networks-19020b758230>