Adeena Ahmed, Suada Demirovic, Yash Dhayal, Jason Swick

CSC 426-01

Dr. Bloodgood

16 May, 2021

D5 Deliverable: Group Reflection Write-Up

1.) The easiest part of this project was plotting the data for analysis once the algorithm was working as intended, as it mostly requires using the plotting functions already built into Python.

2.) The most challenging part of this project was implementing the backpropagation algorithm. Understanding the principles behind the algorithm was complicated and required us to reread over our notes multiple times as well as some supplemental reading about the equations used in the algorithm. Even after we developed an understanding of the algorithm, implementing it in Python was also challenging. We had accidentally used the wrong weights for the corresponding vectors in the forward propagation step and some debugging was required in order to make sure we were using the correct vectors for the algorithm to propagate as intended.

3.) We liked implementing the algorithm. Even though it was challenging, it was fascinating to see how the machine learns to encode 8 bits into 3, then decode those bits back into the original 8. Furthermore, the equations behind the algorithm are complicated, but after ample time reviewing the equations, they provide clarity regarding how the algorithm functions.

4.) We did not find anything negative about this project.

5.) Our group had worked on this project using the LiveShare feature on VSCode which allowed us to create and edit code all on the same file along with having a shared terminal. We would set up a time during the day and meet over Zoom to work on the program until its completion. Yash took charge in developing the first step of the algorithm, forward propagation. Adeena headed the development of the rest of the backpropagation algorithm. All members of the group contributed with checking over code and debugging. Once the algorithm was working as intended, Suada plotted the results for analysis and Jason prepared write-ups for submission. Overall, the group functions cohesively with everyone working together to develop the algorithm and checking over each other's work along the way.

6.) This project has allowed us to further our understanding of the backpropagation algorithm. By implementing the function ourselves, we were able to develop a deeper understanding of how this algorithm can be used to create a neural network that learns how to encode and decode.