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Machine Learning (CSCI-B 555)

Programming Assignment

class Neural_Network: -I have defined class Neural_Network under which I have implemented all the methods separately to understand the methods properly.

_init__(self): -This method I have used to initialize all the parameters. Here I have initialized all the weights using random package of python. I have also initialized the bias in this section.

Sigmoid: - Sigmoid function is used as an activation function. I have defined this method for future use in my code for forward and backward propagation.

forward_backward: -This method is the main method where I am implementing the neural network algorithm. For forward propagation at first I am updating the neurons then calling sigmoid function to activate it. After that checking the error rate.
For convergence, I have given count and after playing the learning rate I have assigned it equal to 9. So, if error rate comes down to less than 0.05 it will learn for count till 9. Once it reaches 9 it will break the for loop. Then I performed backpropagation in this same method. While the error is not zero it performs backpropagation, and used sigmoid method to update the weights so that it fits better.

backward_update:- After performing the initial stage of back propagation the last part of the backpropagation I have designed in this method separately with the updated weights in forward_backward method. Finally, after calculation it is giving us the final predicted output.

End of the code I have created an object NN for class Neural_Network. Using that I called backward_update method to get the final output.