GitHub Link: https://github.com/AbhishekR3/Multiclass_LogisticRegression

Gradient Descent on Iris Dataset

Accuracy Achieved: 100%

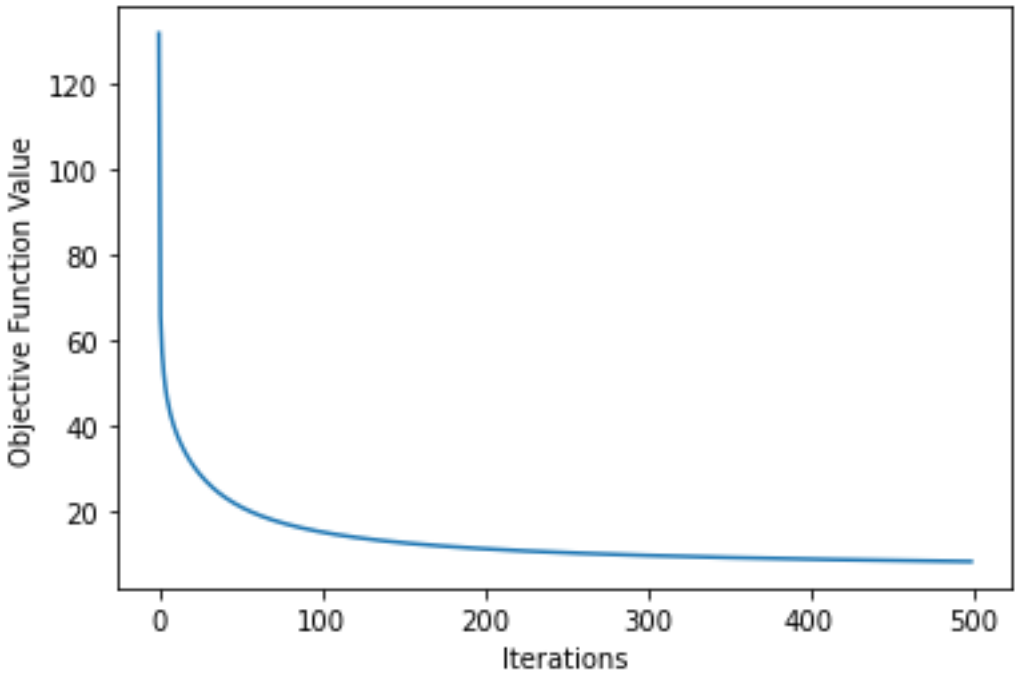
(Very surprising that it was 100%, so changed test_size, random_state, alpha, and iterations to see)

When increase test_size from 20% to 30%, accuracy decreased to 93.33%,

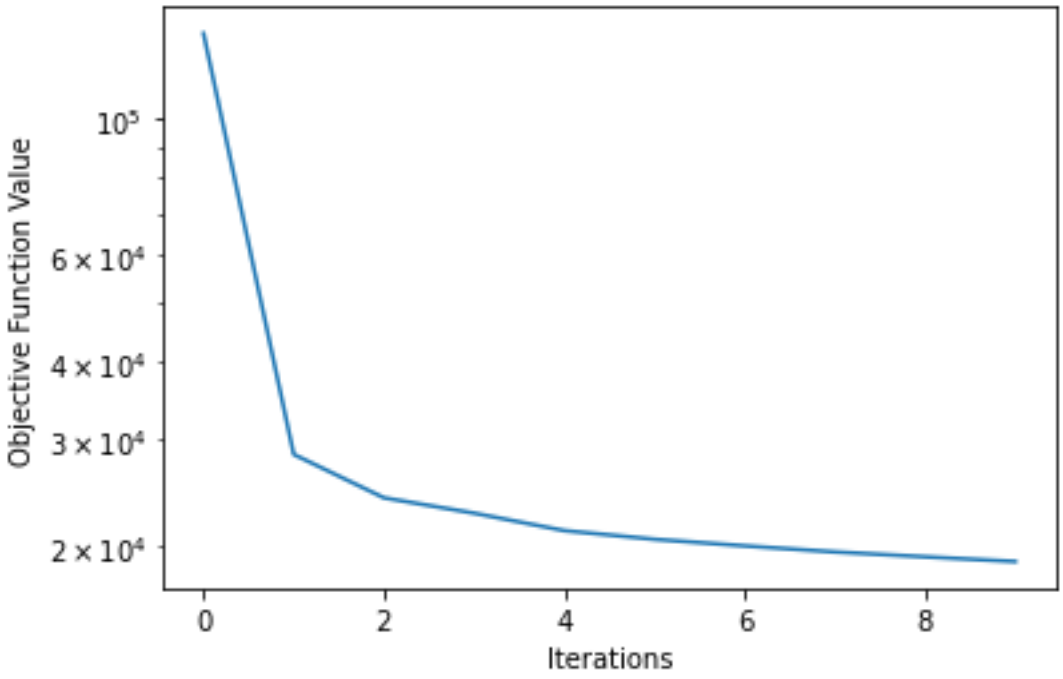
When changed random_state from 3 to 123, accuracy decreased to 96.67%

When changed alpha from 1 to 0.1, accuracy decreased to 96.67%

When changed iterations from 500 to 150, accuracy stayed the same. Only once iterations were set to 105, accuracy decreased, which was 96.67%.

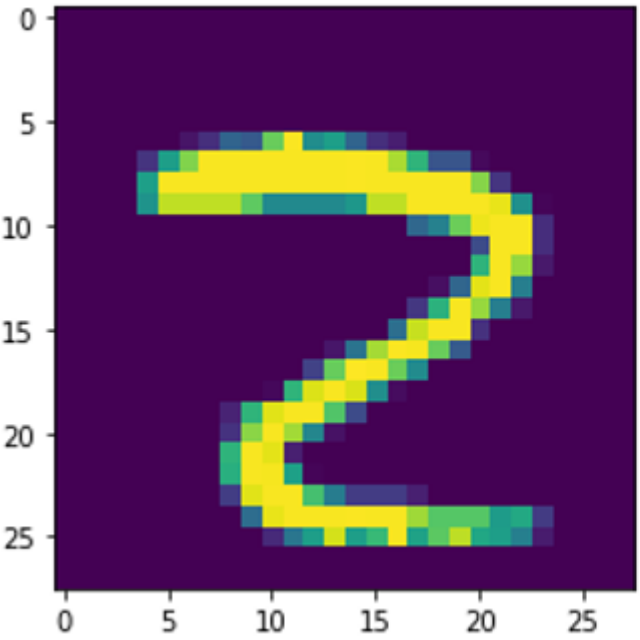


Stochastic Gradient Descent on MNIST Dataset



Accuracy Achieved: 91.53%

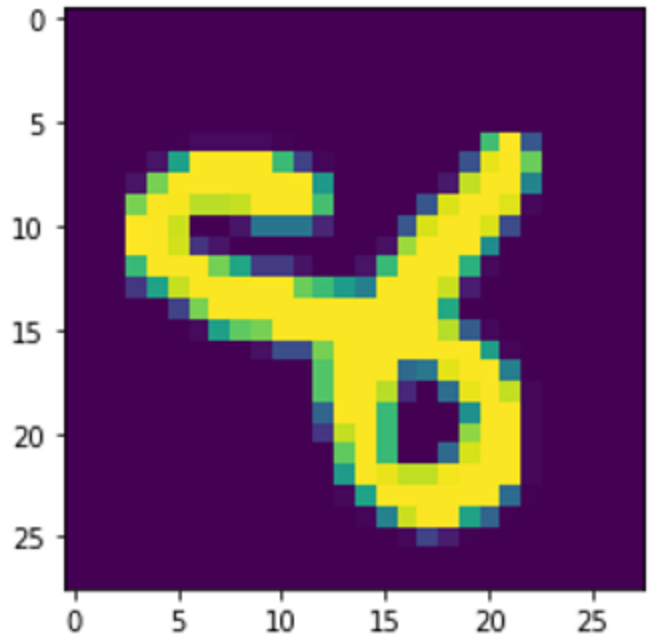
Unfortunately, the code was not 100% accurate, these are the top 3 images that had a high probability of accuracy but were incorrect.



Predicted Value: 7

Ground Truth Value: 2

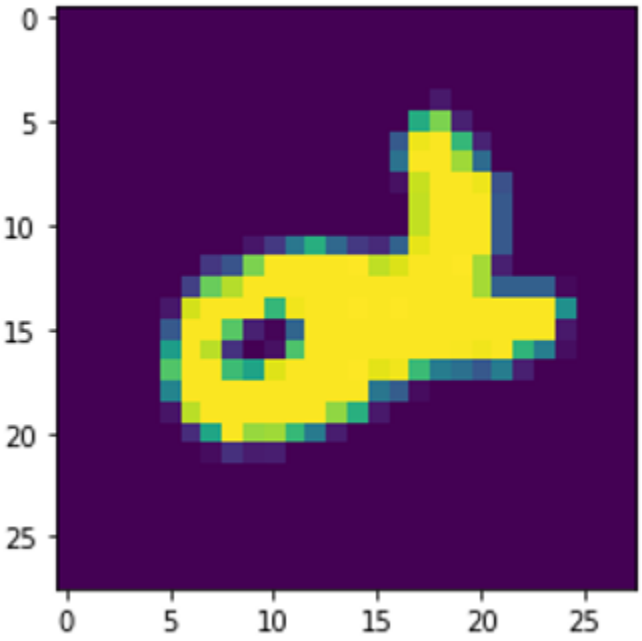
Probability of accuracy: 0.9984607179956648



Predicted Value: 4

Ground Truth Value: 8

Probability of accuracy: 0.9955010920285797



Predicted Value: 4

Ground Truth Value: 2

Probability of accuracy: 0.9953178760517428

These examples are hard to distinguish quickly, but as a human I have had numerous training data to help. If the computer would have as many training data as I have had, it would be even more accurate.