

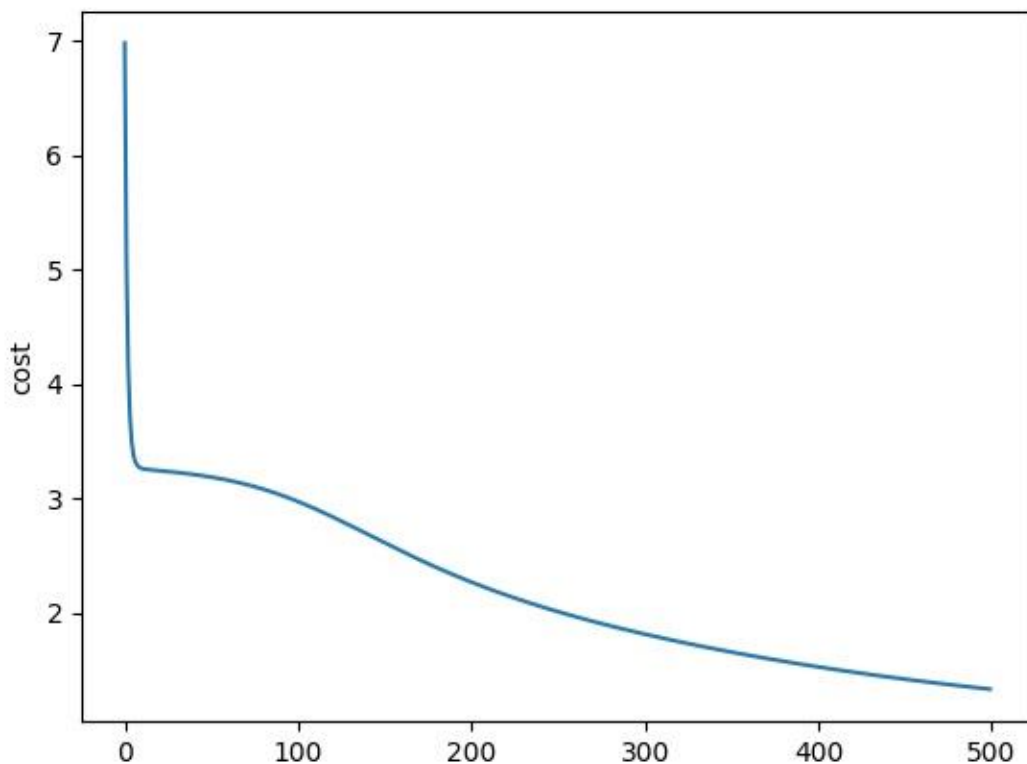
## CSCE 5063-001: Assignment 3

**Due 11:59pm Wednesday, November 03, 2021**

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In this assignment I implemented a neural network to recognize handwritten digits. The goal is to implement the forward propagation algorithm for prediction, and also to implement the backpropagation algorithm for learning the weights.

**The Plot of loss function  $J$  vs. the number of iterations is shown below:**



List the classification results for the following 10 examples from the training set (index starts from 1): 2171 145 1582 2446 3393 815 1378 529 3945 4628. For your reference, the images of these 10 examples are shown in digits.jpg.

The predicted value of training example 2171 is: 4

The predicted value of training example 145 is: 10 (Label 10 means digit 0)

The predicted value of training example 1582 is: 3

The predicted value of training example 2446 is: 4

The predicted value of training example 3393 is: 6

The predicted value of training example 815 is: 1

The predicted value of training example 1378 is: 2

The predicted value of training example 529 is: 1

The predicted value of training example 3945 is: 7

The predicted value of training example 4629 is: 9