COMPSCI 589: MACHINE LEARNING

PROJECT 2 REPORT

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I. Result from running `python hw2.py`

```
PS C:\Users\progr\OneDrive\UMass\Classes Documents\Fall 23\CS 589\Code\project2> &
C:/Users/progr/AppData/Local/Programs/Python/Python39/python.exe "c:/Users/progr/OneDrive/UMass/Classes Documents/Fall
23/CS 589/Code/project2/hw2.py"
run task 1 ...
task 1 finished
run task 2 ...
WARNING: All log messages before absl::InitializeLog() is called are written to STDERR
I0000 00:00:1695591583.018638    8984 tfrt_cpu_pjrt_client.cc:349] TfrtCpuClient created.
No GPU/TPU found, falling back to CPU. (Set TF_CPP_MIN_LOG_LEVEL=0 and rerun for more info.)
task 2 finished
```
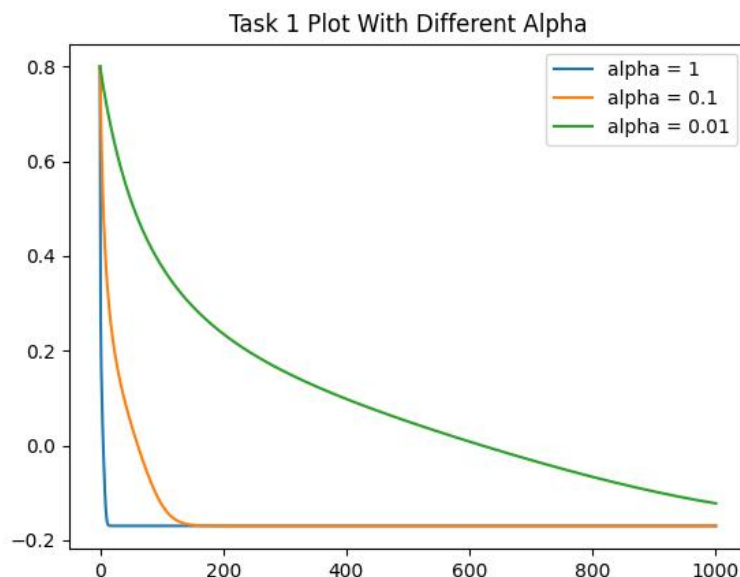
II. Task 1

- Value of the cost function at $w_0 = 2$:

$$g(2) = 1/50 * (16 + 4 + 20) = 0.8$$

- Value of the derivative of the function at $w_0 = 2$

$$g'(2) = 1/50(4*8 + 2*2 + 10) = 46/50 = 23/25$$

- Below is the plot for different step length

- The steplength that works best for this function is 1
- Initial point is $w_0 = 2$

III. <u>Task 2</u>

Task 2 Plot With Different Alpha