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EEL 6935

# Programming Assign 2 – NLP

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Github link: <https://github.com/jeness/EEL6935BIGDATA-project2>

Google Doc link: [https://docs.google.com/document/d/1IzXEzADv-hvVY\\_Fj\\_XyC6DAR5aBYKrIBL3GzovdNorw/edit?usp=sharing](https://docs.google.com/document/d/1IzXEzADv-hvVY_Fj_XyC6DAR5aBYKrIBL3GzovdNorw/edit?usp=sharing)

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### 3.1 Softmax

```
Run q1_softmax
E:\Anaconda2\python.exe "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q1_softmax.py"
Running basic tests...
Traceback (most recent call last):
  [ 0.26894142  0.73105858]
    File "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q1_softmax.py", line 85, in <module>
      [[ 0.26894142  0.73105858]
        test_softmax()
        [ 0.26894142  0.73105858]]
      [[ 0.73105858  0.26894142]]
    File "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q1_softmax.py", line 80, in test_softmax
      You should verify these results!

      raise NotImplementedError
Running your tests...
NotImplementedError

Process finished with exit code 1
```

### 3.2 Neural Network Basics

#### q2\_sigmoid.py

```
Run q2_sigmoid
E:\Anaconda2\python.exe "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_sigmoid.py"
Running basic tests...
Traceback (most recent call last):
  [[ 0.73105858  0.88079708]
    File "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_sigmoid.py", line 58, in <module>
      [ 0.26894142  0.11920292]]
    test_sigmoid()
  [[ 0.19661193  0.10499359]
    [ 0.19661193  0.10499359]]
  You should verify these results!
  File "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_sigmoid.py", line 53, in test_sigmoid

Running your tests...
    raise NotImplementedError
NotImplementedError

Process finished with exit code 1
```

#### q2\_gradcheck.py

```
Run q2_gradcheck
E:\Anaconda2\python.exe "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_gradcheck.py"
Running sanity checks...
Gradient check passed!
Gradient check passed!
Gradient check passed!

Running your sanity checks...
Traceback (most recent call last):
  File "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_gradcheck.py", line 78, in <module>
    your_sanity_checks()
  File "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_gradcheck.py", line 73, in your_sanity_checks
    raise NotImplementedError
NotImplementedError

Process finished with exit code 1
```

#### q2\_neural.py

```

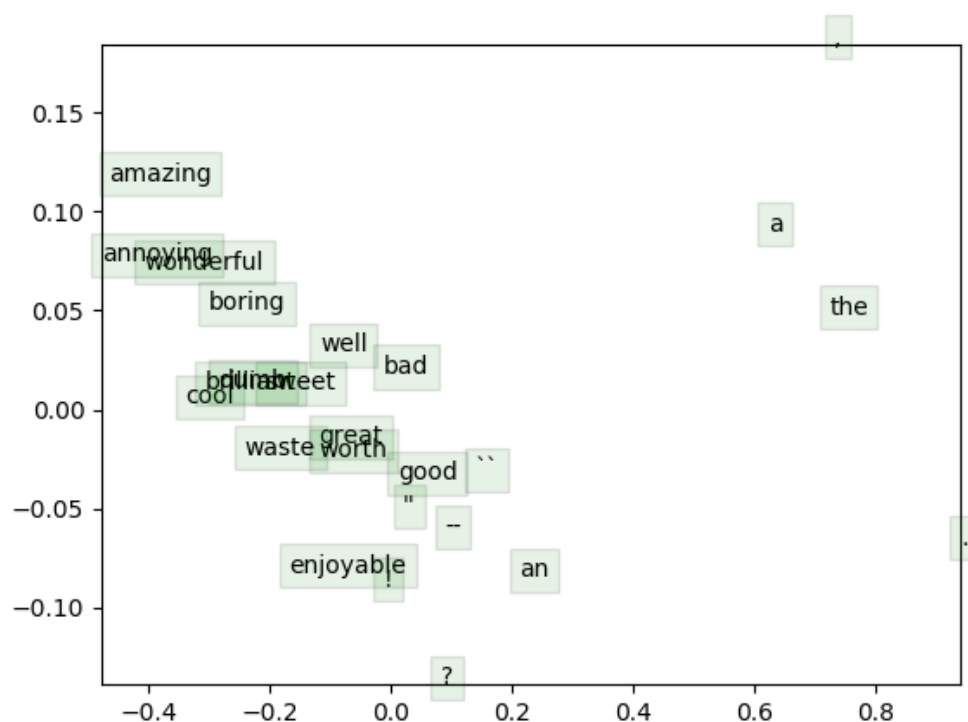
Run q2_neural
E:\Anaconda2\python.exe "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_neural.py"
Running sanity check...
Gradient check passed!
Traceback (most recent call last):
Running your sanity checks...
  File "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_neural.py", line 89, in <module>
    your_sanity_checks()
  File "G:/EEL6935 BIG DATA ECOSYSTEMS/Program assign2/Prog2-NLP-data-code/q2_neural.py", line 84, in your_sanity_checks
    raise NotImplementedError
NotImplementedError

Process finished with exit code 1

```

### 3.3 Word2Vec

q3\_word\_vectors.png



### 3.4 Sentiment Analysis

I mainly try two ways of regularization.

First one is,

REGULARIZATION = [0.1,0.3,0.01,0.03,0.001,0.003,0.0001,0.0003,0.00001,0.00003]

Console output:

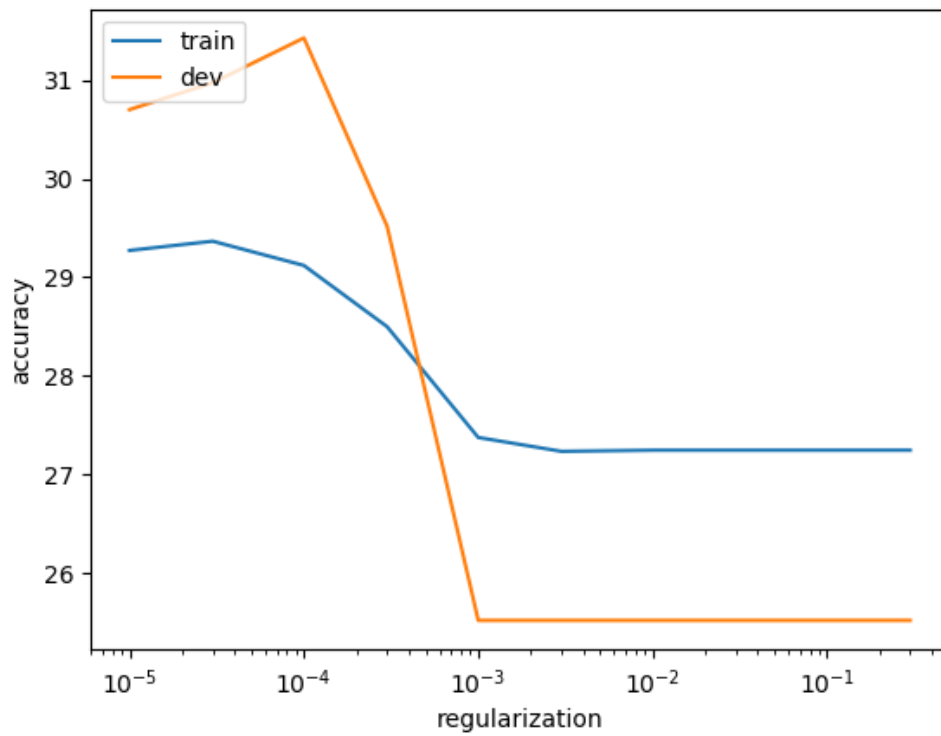
```

=== Recap ===
Reg      Train      Dev
1.000000E-05  29.272004  30.699364
3.000000E-05  29.365637  30.971844
1.000000E-04  29.119850  31.425976
3.000000E-04  28.499532  29.518619
1.000000E-03  27.375936  25.522252
3.000000E-03  27.235487  25.522252
1.000000E-02  27.247191  25.522252
3.000000E-02  27.247191  25.522252
1.000000E-01  27.247191  25.522252
3.000000E-01  27.247191  25.522252

Best regularization value: 1.000000E-04
Test accuracy (%): 27.556561

Process finished with exit code 0

```



Second one is,  
`REGULARIZATION = np.logspace(-5,1,20)`  
 Console output:

```
Run q4_sentiment
Train accuracy (%): 29.272004
Dev accuracy (%): 12.806540

=== Recap ===
Reg      Train      Dev
1.000000E-05  29.272004  30.699364
2.069138E-05  29.353933  31.062670
4.281332E-05  29.201779  31.153497
8.858668E-05  29.236891  31.244323
1.832981E-04  29.014513  30.154405
3.792690E-04  28.288558  27.792916
7.847600E-04  27.621723  26.067212
1.623777E-03  27.258895  25.431426
3.359818E-03  27.235487  25.522252
6.951928E-03  27.247191  25.522252
1.438450E-02  27.247191  25.522252
2.976351E-02  27.247191  25.522252
6.158482E-02  27.247191  25.522252
1.274275E-01  27.247191  25.522252
2.636651E-01  27.247191  25.522252
5.455595E-01  25.971442  26.339691
1.128838E+00  12.816011  12.806540
2.335721E+00  12.816011  12.806540
4.832930E+00  12.816011  12.806540
1.000000E+01  12.816011  12.806540

Best regularization value: 8.858668E-05
Test accuracy (%): 27.375566

Process finished with exit code 0
```

