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Programming Assignment 2 Report

2. Setup

3 Problem detail

3.3 Word2Vec

The result after running **q3_run.py** is shown in the following picture.

```
yichen@yichen-VirtualBox:~/assignment2$ python q3_run.py
iter 10: 23.261994
iter 20: 23.037415
iter 30: 23.025078
iter 40: 22.933648
iter 50: 23.186432
iter 60: 23.413402
iter 70: 23.563869
iter 80: 23.354002
iter 90: 23.322372
iter 100: 23.139831
iter 110: 23.110592
iter 120: 23.028747
iter 130: 23.000204
iter 140: 23.011909
iter 150: 22.991143
iter 160: 22.762088
iter 170: 22.721922
iter 180: 22.701778
iter 190: 22.573827
iter 200: 22.569413
iter 210: 22.653251
iter 220: 22.457727
iter 230: 22.473674
iter 240: 22.469436
iter 250: 22.377364
iter 260: 22.280878
iter 270: 22.256466
iter 280: 22.145254
iter 290: 22.158120
iter 300: 21.957566
iter 310: 22.017925
iter 320: 22.047560
iter 330: 22.129053
iter 340: 22.149677
iter 350: 22.068735
iter 360: 21.944025
```

```
iter 39660: 9.478827
iter 39670: 9.511618
iter 39680: 9.481622
iter 39690: 9.489324
iter 39700: 9.506364
iter 39710: 9.456657
iter 39720: 9.425695
iter 39730: 9.449188
iter 39740: 9.419915
iter 39750: 9.440264
iter 39760: 9.466638
iter 39770: 9.497283
iter 39780: 9.501931
iter 39790: 9.512542
iter 39800: 9.499246
iter 39810: 9.459360
iter 39820: 9.495834
iter 39830: 9.537603
iter 39840: 9.488313
iter 39850: 9.526294
iter 39860: 9.475130
iter 39870: 9.432316
iter 39880: 9.439269
iter 39890: 9.463362
iter 39900: 9.517481
iter 39910: 9.562241
iter 39920: 9.574561
iter 39930: 9.656687
iter 39940: 9.719975
iter 39950: 9.739466
iter 39960: 9.723659
iter 39970: 9.661740
iter 39980: 9.629146
iter 39990: 9.584816
iter 40000: 9.609267
sanity check: cost at convergence should be around or below 10
```
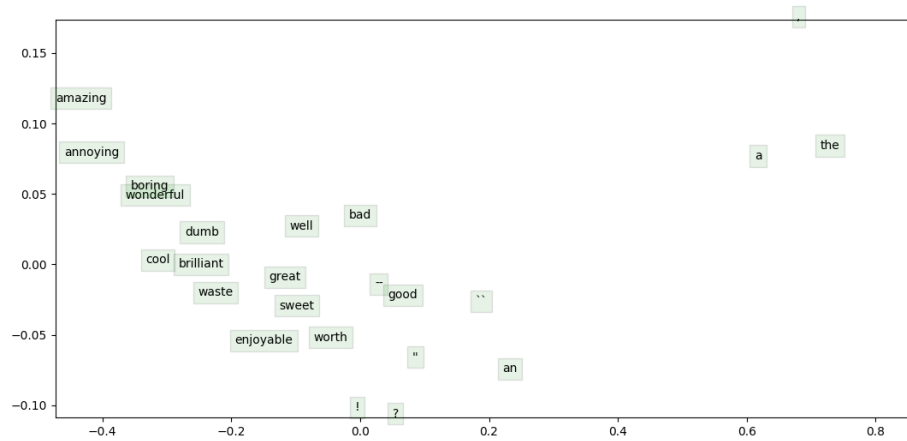
3.4 Sentiment Analysis

The result after running q4 softmaxreg.py

The result after running q4_sentiment.py.

```
yichen@yichen-VirtualBox:~$ cd assignment2
yichen@yichen-VirtualBox:~/assignment2$ python q4_sentiment.py
Training for reg=0.000000
iter 100: 1.570617
iter 200: 1.570597
iter 300: 1.570558
iter 400: 1.570502
iter 500: 1.570431
iter 600: 1.570347
iter 700: 1.570251
iter 800: 1.570144
iter 900: 1.570028
iter 1000: 1.569903
iter 1100: 1.569770
iter 1200: 1.569631
iter 1300: 1.569487
iter 1400: 1.569337
iter 1500: 1.569183
iter 1600: 1.569025
iter 1700: 1.568864
iter 1800: 1.568701
iter 1900: 1.568536
iter 2000: 1.568369
iter 2100: 1.568200
iter 2200: 1.568031
iter 2300: 1.567861
iter 2400: 1.567691
iter 2500: 1.567521
iter 2600: 1.567351
iter 2700: 1.567182
iter 2800: 1.567013
iter 2900: 1.566845
iter 3000: 1.566679
iter 3100: 1.566513
iter 3200: 1.566348
iter 3300: 1.566185
iter 3400: 1.566024
```

```
iter 9500: nan
iter 9600: nan
iter 9700: nan
iter 9800: nan
iter 9900: nan
iter 10000: nan
Train accuracy (%): 12.816011
Dev accuracy (%): 12.806540

=== Recap ===
Reg             Train           Dev
0.000000E+00    29.705056       30.699364
1.000000E-06    29.658240       30.699364
2.018366E-06    29.623127       30.790191
4.073803E-06    29.588015       30.790191
8.222426E-06    29.599719       30.699364
1.659587E-05    29.517790       31.062670
3.349654E-05    29.482678       30.608538
6.760830E-05    29.435861       30.426885
1.364583E-04    29.061330       30.517711
2.754229E-04    28.639981       29.064487
5.559043E-04    27.984551       26.067212
1.122018E-03    27.282303       25.340599
2.264644E-03    27.235487       25.431426
4.570882E-03    27.235487       25.522252
9.225714E-03    27.247191       25.522252
1.862087E-02    27.247191       25.522252
3.758374E-02    27.247191       25.522252
7.585776E-02    27.247191       25.522252
1.531087E-01    27.247191       25.522252
3.090295E-01    27.247191       25.522252
6.237348E-01    14.946161       14.895550
1.258925E+00    12.816011       12.806540

Best regularization value: 1.659587E-05
Test accuracy (%): 28.099548
```