In [1]:

```python
from os import listdir
from os.path import isfile, join
from bs4 import BeautifulSoup
import xml.etree.ElementTree as ET
import codecs
mypath ="/Anaconda/blogs"
import re
import numpy as np
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.cross_validation import train_test_split
from time import time
import sys
import scipy.sparse as sp
import pylab as pl
import cPickle
```

In [2]:

```python
from sklearn.datasets import load_mlcomp
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.linear_model import SGDClassifier
from sklearn.metrics import confusion_matrix
from sklearn.metrics import classification_report
from sklearn.naive_bayes import MultinomialNB
from sklearn.ensemble import RandomForestClassifier
```

In [3]:

```python
def benchmark(clf_class, params, name):
    print("parameters:", params)
    t0 = time()
    clf = clf_class(**params).fit(Xtrain, y_train)
    print("done in %fs" % (time() - t0))

    if hasattr(clf, 'coef_'):
        print("Percentage of non zeros coef: %f"
                % (np.mean(clf.coef_ != 0) * 100))
    print("Predicting the outcomes of the testing set")
    t0 = time()
    pred = clf.predict(Xtest)
    print("done in %fs" % (time() - t0))

    print("Classification report on test set for classifier:")
    print(clf)
    print()
    print(classification_report(y_test, pred))

    with open(name+'.pkl', 'wb') as fid:
        cPickle.dump(clf, fid)

    cm = confusion_matrix(y_test, pred)
    print("Confusion matrix:")
    print(cm)

    # Show confusion matrix
    pl.matshow(cm)
    pl.title('Confusion matrix of the %s classifier' % name)
    pl.colorbar()
```

In [4]:

```python
onlyfiles = [f for f in listdir(mypath) if isfile(join(mypath, f))]
```

In [5]:

```python
def make_documentIndex(listOfDocuments):
    dict_of_words = {}
    doc_corpus = []
    for doc in listOfDocuments:
        file = open(mypath+"/"+doc)
        str = file.read()
        doc_corpus.append(str)


    return doc_corpus
```

In [6]:

```
corpus = make_documentIndex(onlyfiles)
```

In [7]:

```
len(corpus)
```

Out[7]:

19320

In [8]:

```python
def HandleDataAndLabels(coprus,onlyfiles):
    Y = []
    X = []
    numFiles = len(onlyfiles)
    for f in range(0,numFiles):
        age = onlyfiles[f].split('.')[2]
        ag = 0
        if int(age) <= 17:
            ag= 1
        elif int(age) >17 and int(age)< 33:
            ag= 2
        elif int(age) >=33:
            ag= 3

        soup = BeautifulSoup(corpus[f],"lxml")
        result= soup.findAll('post')
        for a in result:
            X.append(a.get_text())
            Y.append(ag)

    return X,Y
```

In [9]:

```python
X,Y = HandleDataAndLabels(corpus,onlyfiles)
X_train, X_test, y_train, y_test = train_test_split(X, Y, train_size=0.7)
```

In [10]:

```python
print "Original Data X,Y",len(X),len(Y)
print "Xtrain,Ytrain ",len(X_train),len(y_train)
print "XTest, YTest ",len(X_test),len(y_test)
```

```
Original Data X,Y 681253 681253
Xtrain,Ytrain  476877 476877
XTest, YTest  204376 204376
```

In [ ]:

In [11]:

```python
t0 = time()
vectorizer = TfidfVectorizer(encoding='utf-8')
Xtrain = vectorizer.fit_transform(X_train)
print("done in %fs" % (time() - t0))
print("n_samples: %d, n_features: %d" % Xtrain.shape)
assert sp.issparse(Xtrain)
```

```
done in 116.214000s
n_samples: 476877, n_features: 586663
```

In [12]:

```python
with open('TFIDF_Vectorizer.pkl', 'wb') as fid:
    cPickle.dump(vectorizer, fid)
```

In [13]:

```python
t0 = time()
Xtest = vectorizer.transform(X_test)

print("done in %fs" % (time() - t0))
print("n_samples: %d, n_features: %d" % Xtest.shape)
```

```
done in 46.528000s
n_samples: 204376, n_features: 586663
```

In [14]:

```
t0 = time()
clf = RandomForestClassifier(n_estimators=100,max_depth=32,n_jobs=4,verbose=True)
clf.fit(Xtrain, y_train)
print("done in %fs" % (time() - t0))

if hasattr(clf, 'coef_'):
    print("Percentage of non zeros coef: %f"
        % (np.mean(clf.coef_ != 0) * 100))
print("Predicting the outcomes of the testing set")
t0 = time()
pred = clf.predict(Xtest)
print("done in %fs" % (time() - t0))

print("Classification report on test set for classifier:")
print(clf)
print()
print(classification_report(y_test, pred))
```

```
[Parallel(n_jobs=4)]: Done  42 tasks       | elapsed:  2.9min
[Parallel(n_jobs=4)]: Done 100 out of 100 | elapsed:  6.5min finished
[Parallel(n_jobs=4)]: Done  42 tasks       | elapsed:    2.5s
[Parallel(n_jobs=4)]: Done 100 out of 100 | elapsed:    5.7s finished

done in 395.579000s
Predicting the outcomes of the testing set
done in 6.061000s
Classification report on test set for classifier:
RandomForestClassifier(bootstrap=True, class_weight=None, criterion='gi
ni',
            max_depth=32, max_features='auto', max_leaf_nodes=None,
            min_samples_leaf=1, min_samples_split=2,
            min_weight_fraction_leaf=0.0, n_estimators=100, n_jobs=4,
            oob_score=False, random_state=None, verbose=True,
            warm_start=False)
()
            precision    recall  f1-score   support

        1       0.92      0.23      0.36     70783
        2       0.51      0.99      0.67     96334
        3       0.97      0.01      0.01     37259

avg / total       0.74      0.54      0.44    204376
```

In [19]:

```python
"""
importances = clf.feature_importances_
std = np.std([tree.feature_importances_ for tree in clf.estimators_],axis=0)
indices = np.argsort(importances)[::-1]

# Print the feature ranking
print("Feature ranking:")

for f in range(Xtrain.shape[1]):
    print("%d. feature %d (%f)" % (f + 1, indices[f], importances[indices[f]]))

# Plot the feature importances of the forest
plt.figure()
plt.title("Feature importances")
plt.bar(range(Xtrain.shape[1]), importances[indices],
       color="r", yerr=std[indices], align="center")
plt.xticks(range(X.shape[1]), indices)
plt.xlim([-1, X.shape[1]])
plt.show()
"""
```

Out[19]:

'""\nimportances = clf.feature_importances_\nstd = np.std([tree.feature
importances for tree in clf.estimators_],axis=0)\nindices = np.argsor
t(importances)[::-1]\n\n# Print the feature ranking\nprint("Feature ran
king:")\n\nfor f in range(Xtrain.shape[1]):\n   print("%d. feature %d
(%f)" % (f + 1, indices[f], importances[indices[f]]))\n\n# Plot the fea
ture importances of the forest\nplt.figure()\nplt.title("Feature import
ances")\nplt.bar(range(Xtrain.shape[1]), importances[indices],\n
color="r", yerr=std[indices], align="center")\nplt.xticks(range(X.shape
[1]), indices)\nplt.xlim([-1, X.shape[1]])\nplt.show()\n'

In [15]:

```python
with open('RF_classifier2.pkl', 'wb') as fid:
    cPickle.dump(clf, fid)

# load it again
#with open('my_dumped_classifier.pkl', 'rb') as fid:
 #   gnb_loaded = cPickle.load(fid)
```

In [14]:

```
print("Testbenching a MultinomialNB classifier...")
parameters = {'alpha': 0.01}

benchmark(MultinomialNB, parameters, 'MultiNB')
pl.show()
```

```
Testbenching a MultinomialNB classifier...
('parameters:', {'alpha': 0.01})
done in 0.900000s
Percentage of non zeros coef: 100.000000
Predicting the outcomes of the testing set
done in 0.338000s
Classification report on test set for classifier:
MultinomialNB(alpha=0.01, class_prior=None, fit_prior=True)
()
```

	precision	recall	f1-score	support
1	0.80	0.68	0.73	70564
2	0.64	0.85	0.73	96614
3	0.64	0.30	0.40	37198
avg / total	0.70	0.69	0.67	204376

```
Confusion matrix:
[[47665 21730  1169]
 [ 9799 81674  5141]
 [ 1931 24221 11046]]
```

In [15]:

```python
print("Testbenching a linear classifier...")
parameters = {
    'loss': 'hinge',
    'penalty': 'l2',
    'n_iter': 50,
    'alpha': 0.00001,
    'fit_intercept': True,
}

benchmark(SGDClassifier, parameters, 'SGD')
pl.show()
```

```
Testbenching a linear classifier...
('parameters:', {'penalty': 'l2', 'loss': 'hinge', 'alpha': 1e-05, 'fit
_intercept': True, 'n_iter': 50})
done in 51.508000s
Percentage of non zeros coef: 71.303162
Predicting the outcomes of the testing set
done in 0.275000s
Classification report on test set for classifier:
SGDClassifier(alpha=1e-05, average=False, class_weight=None, epsilon=0.
1,
       eta0=0.0, fit_intercept=True, l1_ratio=0.15,
       learning_rate='optimal', loss='hinge', n_iter=50, n_jobs=1,
       penalty='l2', power_t=0.5, random_state=None, shuffle=True,
       verbose=0, warm_start=False)
()
             precision    recall  f1-score   support

          1       0.77      0.71      0.74     70805
          2       0.63      0.86      0.73     96773
          3       0.76      0.15      0.26     36798

avg / total       0.70      0.68      0.65    204376

Confusion matrix:
[[50447 19957   401]
 [11953 83416  1404]
 [ 2929 28166  5703]]
```

In [16]:

```python
print("Testbenching a logistic Regression...")
parameters = {
    'loss': 'log',
    'penalty': 'l2',
    'n_iter': 250,
    'alpha': 0.000001,
    'fit_intercept': True,
    'verbose':True,
}

benchmark(SGDClassifier, parameters, 'SGD')
pl.show()
```

```
Testbenching a logistic Regression...
('parameters:', {'loss': 'log', 'verbose': True, 'fit_intercept': True,
'n_iter': 250, 'penalty': 'l2', 'alpha': 1e-06})
-- Epoch 1
Norm: 335.66, NNZs: 589993, Bias: -0.737125, T: 476877, Avg. loss: 0.61
1524
Total training time: 0.42 seconds.
-- Epoch 2
Norm: 297.43, NNZs: 589993, Bias: -0.877073, T: 953754, Avg. loss: 0.48
5343
Total training time: 0.84 seconds.
-- Epoch 3
Norm: 286.99, NNZs: 589993, Bias: -0.780909, T: 1430631, Avg. loss: 0.4
37168
Total training time: 1.26 seconds.
-- Epoch 4
Norm: 282.28, NNZs: 589993, Bias: -0.805562, T: 1907508, Avg. loss: 0.4
11354
Total training time: 1.68 seconds.
-- Epoch 5
Norm: 279.50, NNZs: 589993, Bias: -0.838697, T: 2384385, Avg. loss: 0.3
95094
Total training time: 2.10 seconds.
-- Epoch 6
Norm: 277.59, NNZs: 589993, Bias: -0.861567, T: 2861262, Avg. loss: 0.3
83832
Total training time: 2.52 seconds.
-- Epoch 7
Norm: 276.54, NNZs: 589993, Bias: -0.794518, T: 3338139, Avg. loss: 0.3
75537
Total training time: 2.94 seconds.
-- Epoch 8
Norm: 275.61, NNZs: 589993, Bias: -0.847505, T: 3815016, Avg. loss: 0.3
69164
Total training time: 3.37 seconds.
-- Epoch 9
Norm: 275.01, NNZs: 589993, Bias: -0.909516, T: 4291893, Avg. loss: 0.3
64094
Total training time: 3.81 seconds.
-- Epoch 10
Norm: 274.40, NNZs: 589993, Bias: -0.830608, T: 4768770, Avg. loss: 0.3
59958
Total training time: 4.24 seconds.
-- Epoch 11
Norm: 273.93, NNZs: 589993, Bias: -0.804573, T: 5245647, Avg. loss: 0.3
56521
Total training time: 4.66 seconds.
-- Epoch 12
Norm: 273.58, NNZs: 589993, Bias: -0.854293, T: 5722524, Avg. loss: 0.3
53612
Total training time: 5.08 seconds.
-- Epoch 13
Norm: 273.28, NNZs: 589993, Bias: -0.807371, T: 6199401, Avg. loss: 0.3
51119
Total training time: 5.50 seconds.
-- Epoch 14
Norm: 273.00, NNZs: 589993, Bias: -0.847245, T: 6676278, Avg. loss: 0.3
```

```
48956
Total training time: 5.91 seconds.
-- Epoch 15
Norm: 272.79, NNZs: 589993, Bias: -0.808436, T: 7153155, Avg. loss: 0.3
47061
Total training time: 6.32 seconds.
-- Epoch 16
Norm: 272.57, NNZs: 589993, Bias: -0.819901, T: 7630032, Avg. loss: 0.3
45383
Total training time: 6.75 seconds.
-- Epoch 17
Norm: 272.36, NNZs: 589993, Bias: -0.821928, T: 8106909, Avg. loss: 0.3
43887
Total training time: 7.21 seconds.
-- Epoch 18
Norm: 272.22, NNZs: 589993, Bias: -0.852776, T: 8583786, Avg. loss: 0.3
42545
Total training time: 7.62 seconds.
-- Epoch 19
Norm: 272.10, NNZs: 589993, Bias: -0.822375, T: 9060663, Avg. loss: 0.3
41334
Total training time: 8.10 seconds.
-- Epoch 20
Norm: 271.98, NNZs: 589993, Bias: -0.798753, T: 9537540, Avg. loss: 0.3
40231
Total training time: 8.59 seconds.
-- Epoch 21
Norm: 271.85, NNZs: 589993, Bias: -0.806475, T: 10014417, Avg. loss: 0.
339227
Total training time: 9.07 seconds.
-- Epoch 22
Norm: 271.74, NNZs: 589993, Bias: -0.835848, T: 10491294, Avg. loss: 0.
338308
Total training time: 9.54 seconds.
-- Epoch 23
Norm: 271.63, NNZs: 589993, Bias: -0.832348, T: 10968171, Avg. loss: 0.
337465
Total training time: 10.01 seconds.
-- Epoch 24
Norm: 271.52, NNZs: 589993, Bias: -0.839184, T: 11445048, Avg. loss: 0.
336686
Total training time: 10.49 seconds.
-- Epoch 25
Norm: 271.45, NNZs: 589993, Bias: -0.809243, T: 11921925, Avg. loss: 0.
335964
Total training time: 10.97 seconds.
-- Epoch 26
Norm: 271.39, NNZs: 589993, Bias: -0.813763, T: 12398802, Avg. loss: 0.
335294
Total training time: 11.41 seconds.
-- Epoch 27
Norm: 271.32, NNZs: 589993, Bias: -0.811127, T: 12875679, Avg. loss: 0.
334669
Total training time: 11.82 seconds.
-- Epoch 28
Norm: 271.23, NNZs: 589993, Bias: -0.823538, T: 13352556, Avg. loss: 0.
334087
```

```
Total training time: 12.25 seconds.
-- Epoch 29
Norm: 271.18, NNZs: 589993, Bias: -0.808284, T: 13829433, Avg. loss: 0.
333542
Total training time: 12.66 seconds.
-- Epoch 30
Norm: 271.12, NNZs: 589993, Bias: -0.797801, T: 14306310, Avg. loss: 0.
333030
Total training time: 13.06 seconds.
-- Epoch 31
Norm: 271.07, NNZs: 589993, Bias: -0.835900, T: 14783187, Avg. loss: 0.
332547
Total training time: 13.47 seconds.
-- Epoch 32
Norm: 270.99, NNZs: 589993, Bias: -0.832868, T: 15260064, Avg. loss: 0.
332094
Total training time: 13.88 seconds.
-- Epoch 33
Norm: 270.95, NNZs: 589993, Bias: -0.861263, T: 15736941, Avg. loss: 0.
331665
Total training time: 14.30 seconds.
-- Epoch 34
Norm: 270.90, NNZs: 589993, Bias: -0.832812, T: 16213818, Avg. loss: 0.
331260
Total training time: 14.76 seconds.
-- Epoch 35
Norm: 270.87, NNZs: 589993, Bias: -0.823338, T: 16690695, Avg. loss: 0.
330878
Total training time: 15.18 seconds.
-- Epoch 36
Norm: 270.82, NNZs: 589993, Bias: -0.818617, T: 17167572, Avg. loss: 0.
330515
Total training time: 15.61 seconds.
-- Epoch 37
Norm: 270.77, NNZs: 589993, Bias: -0.820212, T: 17644449, Avg. loss: 0.
330170
Total training time: 16.09 seconds.
-- Epoch 38
Norm: 270.73, NNZs: 589993, Bias: -0.833962, T: 18121326, Avg. loss: 0.
329841
Total training time: 16.58 seconds.
-- Epoch 39
Norm: 270.70, NNZs: 589993, Bias: -0.804612, T: 18598203, Avg. loss: 0.
329528
Total training time: 17.07 seconds.
-- Epoch 40
Norm: 270.66, NNZs: 589993, Bias: -0.838505, T: 19075080, Avg. loss: 0.
329230
Total training time: 17.53 seconds.
-- Epoch 41
Norm: 270.63, NNZs: 589993, Bias: -0.808449, T: 19551957, Avg. loss: 0.
328944
Total training time: 17.94 seconds.
-- Epoch 42
Norm: 270.62, NNZs: 589993, Bias: -0.821296, T: 20028834, Avg. loss: 0.
328672
Total training time: 18.35 seconds.
```

```
-- Epoch 43
Norm: 270.57, NNZs: 589993, Bias: -0.841548, T: 20505711, Avg. loss: 0.
328412
Total training time: 18.76 seconds.
-- Epoch 44
Norm: 270.56, NNZs: 589993, Bias: -0.837757, T: 20982588, Avg. loss: 0.
328162
Total training time: 19.17 seconds.
-- Epoch 45
Norm: 270.53, NNZs: 589993, Bias: -0.811473, T: 21459465, Avg. loss: 0.
327923
Total training time: 19.59 seconds.
-- Epoch 46
Norm: 270.50, NNZs: 589993, Bias: -0.824771, T: 21936342, Avg. loss: 0.
327693
Total training time: 20.08 seconds.
-- Epoch 47
Norm: 270.47, NNZs: 589993, Bias: -0.837635, T: 22413219, Avg. loss: 0.
327473
Total training time: 20.55 seconds.
-- Epoch 48
Norm: 270.45, NNZs: 589993, Bias: -0.818703, T: 22890096, Avg. loss: 0.
327261
Total training time: 21.00 seconds.
-- Epoch 49
Norm: 270.43, NNZs: 589993, Bias: -0.829552, T: 23366973, Avg. loss: 0.
327057
Total training time: 21.41 seconds.
-- Epoch 50
Norm: 270.41, NNZs: 589993, Bias: -0.804679, T: 23843850, Avg. loss: 0.
326860
Total training time: 21.81 seconds.
-- Epoch 51
Norm: 270.38, NNZs: 589993, Bias: -0.827707, T: 24320727, Avg. loss: 0.
326671
Total training time: 22.23 seconds.
-- Epoch 52
Norm: 270.37, NNZs: 589993, Bias: -0.820393, T: 24797604, Avg. loss: 0.
326489
Total training time: 22.68 seconds.
-- Epoch 53
Norm: 270.35, NNZs: 589993, Bias: -0.811378, T: 25274481, Avg. loss: 0.
326312
Total training time: 23.14 seconds.
-- Epoch 54
Norm: 270.32, NNZs: 589993, Bias: -0.824064, T: 25751358, Avg. loss: 0.
326143
Total training time: 23.59 seconds.
-- Epoch 55
Norm: 270.29, NNZs: 589993, Bias: -0.825193, T: 26228235, Avg. loss: 0.
325978
Total training time: 24.00 seconds.
-- Epoch 56
Norm: 270.28, NNZs: 589993, Bias: -0.824786, T: 26705112, Avg. loss: 0.
325819
Total training time: 24.42 seconds.
-- Epoch 57
```

```
Norm: 270.27, NNZs: 589993, Bias: -0.825039, T: 27181989, Avg. loss: 0.
325666
Total training time: 24.87 seconds.
-- Epoch 58
Norm: 270.26, NNZs: 589993, Bias: -0.833226, T: 27658866, Avg. loss: 0.
325517
Total training time: 25.34 seconds.
-- Epoch 59
Norm: 270.25, NNZs: 589993, Bias: -0.817905, T: 28135743, Avg. loss: 0.
325373
Total training time: 25.75 seconds.
-- Epoch 60
Norm: 270.22, NNZs: 589993, Bias: -0.825362, T: 28612620, Avg. loss: 0.
325233
Total training time: 26.16 seconds.
-- Epoch 61
Norm: 270.22, NNZs: 589993, Bias: -0.824855, T: 29089497, Avg. loss: 0.
325098
Total training time: 26.61 seconds.
-- Epoch 62
Norm: 270.20, NNZs: 589993, Bias: -0.826166, T: 29566374, Avg. loss: 0.
324966
Total training time: 27.04 seconds.
-- Epoch 63
Norm: 270.19, NNZs: 589993, Bias: -0.817756, T: 30043251, Avg. loss: 0.
324839
Total training time: 27.50 seconds.
-- Epoch 64
Norm: 270.16, NNZs: 589993, Bias: -0.827919, T: 30520128, Avg. loss: 0.
324716
Total training time: 27.91 seconds.
-- Epoch 65
Norm: 270.16, NNZs: 589993, Bias: -0.823320, T: 30997005, Avg. loss: 0.
324595
Total training time: 28.38 seconds.
-- Epoch 66
Norm: 270.15, NNZs: 589993, Bias: -0.817078, T: 31473882, Avg. loss: 0.
324479
Total training time: 28.84 seconds.
-- Epoch 67
Norm: 270.13, NNZs: 589993, Bias: -0.835022, T: 31950759, Avg. loss: 0.
324365
Total training time: 29.24 seconds.
-- Epoch 68
Norm: 270.12, NNZs: 589993, Bias: -0.819925, T: 32427636, Avg. loss: 0.
324255
Total training time: 29.65 seconds.
-- Epoch 69
Norm: 270.11, NNZs: 589993, Bias: -0.832011, T: 32904513, Avg. loss: 0.
324147
Total training time: 30.07 seconds.
-- Epoch 70
Norm: 270.10, NNZs: 589993, Bias: -0.805773, T: 33381390, Avg. loss: 0.
324043
Total training time: 30.48 seconds.
-- Epoch 71
Norm: 270.08, NNZs: 589993, Bias: -0.828094, T: 33858267, Avg. loss: 0.
```

```
323941
Total training time: 30.89 seconds.
-- Epoch 72
Norm: 270.08, NNZs: 589993, Bias: -0.815598, T: 34335144, Avg. loss: 0.
323842
Total training time: 31.30 seconds.
-- Epoch 73
Norm: 270.07, NNZs: 589993, Bias: -0.826483, T: 34812021, Avg. loss: 0.
323745
Total training time: 31.71 seconds.
-- Epoch 74
Norm: 270.05, NNZs: 589993, Bias: -0.842876, T: 35288898, Avg. loss: 0.
323651
Total training time: 32.12 seconds.
-- Epoch 75
Norm: 270.05, NNZs: 589993, Bias: -0.813730, T: 35765775, Avg. loss: 0.
323559
Total training time: 32.54 seconds.
-- Epoch 76
Norm: 270.03, NNZs: 589993, Bias: -0.820780, T: 36242652, Avg. loss: 0.
323469
Total training time: 32.95 seconds.
-- Epoch 77
Norm: 270.02, NNZs: 589993, Bias: -0.817261, T: 36719529, Avg. loss: 0.
323382
Total training time: 33.35 seconds.
-- Epoch 78
Norm: 270.02, NNZs: 589993, Bias: -0.825259, T: 37196406, Avg. loss: 0.
323296
Total training time: 33.76 seconds.
-- Epoch 79
Norm: 270.01, NNZs: 589993, Bias: -0.829893, T: 37673283, Avg. loss: 0.
323213
Total training time: 34.16 seconds.
-- Epoch 80
Norm: 270.00, NNZs: 589993, Bias: -0.825660, T: 38150160, Avg. loss: 0.
323132
Total training time: 34.57 seconds.
-- Epoch 81
Norm: 269.99, NNZs: 589993, Bias: -0.833122, T: 38627037, Avg. loss: 0.
323052
Total training time: 34.97 seconds.
-- Epoch 82
Norm: 269.98, NNZs: 589993, Bias: -0.829282, T: 39103914, Avg. loss: 0.
322975
Total training time: 35.38 seconds.
-- Epoch 83
Norm: 269.97, NNZs: 589993, Bias: -0.833025, T: 39580791, Avg. loss: 0.
322899
Total training time: 35.79 seconds.
-- Epoch 84
Norm: 269.97, NNZs: 589993, Bias: -0.810170, T: 40057668, Avg. loss: 0.
322824
Total training time: 36.19 seconds.
-- Epoch 85
Norm: 269.96, NNZs: 589993, Bias: -0.827062, T: 40534545, Avg. loss: 0.
322752
```

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Total training time: 36.60 seconds.
-- Epoch 86
Norm: 269.95, NNZs: 589993, Bias: -0.828918, T: 41011422, Avg. loss: 0.
322680
Total training time: 37.01 seconds.
-- Epoch 87
Norm: 269.94, NNZs: 589993, Bias: -0.830315, T: 41488299, Avg. loss: 0.
322611
Total training time: 37.41 seconds.
-- Epoch 88
Norm: 269.93, NNZs: 589993, Bias: -0.827675, T: 41965176, Avg. loss: 0.
322543
Total training time: 37.84 seconds.
-- Epoch 89
Norm: 269.92, NNZs: 589993, Bias: -0.822530, T: 42442053, Avg. loss: 0.
322476
Total training time: 38.25 seconds.
-- Epoch 90
Norm: 269.92, NNZs: 589993, Bias: -0.814518, T: 42918930, Avg. loss: 0.
322411
Total training time: 38.66 seconds.
-- Epoch 91
Norm: 269.91, NNZs: 589993, Bias: -0.819951, T: 43395807, Avg. loss: 0.
322347
Total training time: 39.07 seconds.
-- Epoch 92
Norm: 269.90, NNZs: 589993, Bias: -0.827108, T: 43872684, Avg. loss: 0.
322284
Total training time: 39.49 seconds.
-- Epoch 93
Norm: 269.90, NNZs: 589993, Bias: -0.828682, T: 44349561, Avg. loss: 0.
322223
Total training time: 39.90 seconds.
-- Epoch 94
Norm: 269.90, NNZs: 589993, Bias: -0.828530, T: 44826438, Avg. loss: 0.
322162
Total training time: 40.31 seconds.
-- Epoch 95
Norm: 269.88, NNZs: 589993, Bias: -0.828707, T: 45303315, Avg. loss: 0.
322103
Total training time: 40.72 seconds.
-- Epoch 96
Norm: 269.88, NNZs: 589993, Bias: -0.825233, T: 45780192, Avg. loss: 0.
322045
Total training time: 41.12 seconds.
-- Epoch 97
Norm: 269.88, NNZs: 589993, Bias: -0.828761, T: 46257069, Avg. loss: 0.
321989
Total training time: 41.54 seconds.
-- Epoch 98
Norm: 269.87, NNZs: 589993, Bias: -0.818018, T: 46733946, Avg. loss: 0.
321933
Total training time: 41.95 seconds.
-- Epoch 99
Norm: 269.86, NNZs: 589993, Bias: -0.833996, T: 47210823, Avg. loss: 0.
321878
Total training time: 42.35 seconds.
```

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-- Epoch 100
Norm: 269.86, NNZs: 589993, Bias: -0.826858, T: 47687700, Avg. loss: 0.
321825
Total training time: 42.78 seconds.
-- Epoch 101
Norm: 269.85, NNZs: 589993, Bias: -0.819649, T: 48164577, Avg. loss: 0.
321772
Total training time: 43.19 seconds.
-- Epoch 102
Norm: 269.84, NNZs: 589993, Bias: -0.826719, T: 48641454, Avg. loss: 0.
321720
Total training time: 43.60 seconds.
-- Epoch 103
Norm: 269.84, NNZs: 589993, Bias: -0.837746, T: 49118331, Avg. loss: 0.
321670
Total training time: 44.05 seconds.
-- Epoch 104
Norm: 269.83, NNZs: 589993, Bias: -0.835977, T: 49595208, Avg. loss: 0.
321620
Total training time: 44.47 seconds.
-- Epoch 105
Norm: 269.83, NNZs: 589993, Bias: -0.822233, T: 50072085, Avg. loss: 0.
321571
Total training time: 44.88 seconds.
-- Epoch 106
Norm: 269.82, NNZs: 589993, Bias: -0.828139, T: 50548962, Avg. loss: 0.
321523
Total training time: 45.29 seconds.
-- Epoch 107
Norm: 269.82, NNZs: 589993, Bias: -0.826222, T: 51025839, Avg. loss: 0.
321476
Total training time: 45.70 seconds.
-- Epoch 108
Norm: 269.81, NNZs: 589993, Bias: -0.827077, T: 51502716, Avg. loss: 0.
321429
Total training time: 46.11 seconds.
-- Epoch 109
Norm: 269.81, NNZs: 589993, Bias: -0.820764, T: 51979593, Avg. loss: 0.
321384
Total training time: 46.52 seconds.
-- Epoch 110
Norm: 269.80, NNZs: 589993, Bias: -0.832266, T: 52456470, Avg. loss: 0.
321339
Total training time: 46.93 seconds.
-- Epoch 111
Norm: 269.80, NNZs: 589993, Bias: -0.827352, T: 52933347, Avg. loss: 0.
321295
Total training time: 47.44 seconds.
-- Epoch 112
Norm: 269.79, NNZs: 589993, Bias: -0.828238, T: 53410224, Avg. loss: 0.
321252
Total training time: 47.87 seconds.
-- Epoch 113
Norm: 269.78, NNZs: 589993, Bias: -0.825472, T: 53887101, Avg. loss: 0.
321209
Total training time: 48.32 seconds.
-- Epoch 114
```

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Norm: 269.78, NNZs: 589993, Bias: -0.825433, T: 54363978, Avg. loss: 0.
321167
Total training time: 48.73 seconds.
-- Epoch 115
Norm: 269.78, NNZs: 589993, Bias: -0.826042, T: 54840855, Avg. loss: 0.
321126
Total training time: 49.13 seconds.
-- Epoch 116
Norm: 269.77, NNZs: 589993, Bias: -0.829919, T: 55317732, Avg. loss: 0.
321085
Total training time: 49.55 seconds.
-- Epoch 117
Norm: 269.77, NNZs: 589993, Bias: -0.828740, T: 55794609, Avg. loss: 0.
321045
Total training time: 49.96 seconds.
-- Epoch 118
Norm: 269.76, NNZs: 589993, Bias: -0.822649, T: 56271486, Avg. loss: 0.
321006
Total training time: 50.37 seconds.
-- Epoch 119
Norm: 269.76, NNZs: 589993, Bias: -0.827779, T: 56748363, Avg. loss: 0.
320967
Total training time: 50.79 seconds.
-- Epoch 120
Norm: 269.76, NNZs: 589993, Bias: -0.819826, T: 57225240, Avg. loss: 0.
320929
Total training time: 51.20 seconds.
-- Epoch 121
Norm: 269.75, NNZs: 589993, Bias: -0.828935, T: 57702117, Avg. loss: 0.
320891
Total training time: 51.61 seconds.
-- Epoch 122
Norm: 269.75, NNZs: 589993, Bias: -0.818273, T: 58178994, Avg. loss: 0.
320854
Total training time: 52.02 seconds.
-- Epoch 123
Norm: 269.74, NNZs: 589993, Bias: -0.828623, T: 58655871, Avg. loss: 0.
320818
Total training time: 52.47 seconds.
-- Epoch 124
Norm: 269.74, NNZs: 589993, Bias: -0.824114, T: 59132748, Avg. loss: 0.
320782
Total training time: 52.93 seconds.
-- Epoch 125
Norm: 269.74, NNZs: 589993, Bias: -0.824611, T: 59609625, Avg. loss: 0.
320747
Total training time: 53.36 seconds.
-- Epoch 126
Norm: 269.73, NNZs: 589993, Bias: -0.832875, T: 60086502, Avg. loss: 0.
320712
Total training time: 53.78 seconds.
-- Epoch 127
Norm: 269.73, NNZs: 589993, Bias: -0.824385, T: 60563379, Avg. loss: 0.
320678
Total training time: 54.18 seconds.
-- Epoch 128
Norm: 269.72, NNZs: 589993, Bias: -0.820736, T: 61040256, Avg. loss: 0.
```

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320644
Total training time: 54.60 seconds.
-- Epoch 129
Norm: 269.72, NNZs: 589993, Bias: -0.826667, T: 61517133, Avg. loss: 0.
320611
Total training time: 55.06 seconds.
-- Epoch 130
Norm: 269.71, NNZs: 589993, Bias: -0.830004, T: 61994010, Avg. loss: 0.
320578
Total training time: 55.52 seconds.
-- Epoch 131
Norm: 269.71, NNZs: 589993, Bias: -0.824200, T: 62470887, Avg. loss: 0.
320546
Total training time: 55.98 seconds.
-- Epoch 132
Norm: 269.71, NNZs: 589993, Bias: -0.819514, T: 62947764, Avg. loss: 0.
320514
Total training time: 56.39 seconds.
-- Epoch 133
Norm: 269.71, NNZs: 589993, Bias: -0.827534, T: 63424641, Avg. loss: 0.
320482
Total training time: 56.80 seconds.
-- Epoch 134
Norm: 269.70, NNZs: 589993, Bias: -0.832188, T: 63901518, Avg. loss: 0.
320451
Total training time: 57.27 seconds.
-- Epoch 135
Norm: 269.70, NNZs: 589993, Bias: -0.834114, T: 64378395, Avg. loss: 0.
320421
Total training time: 57.73 seconds.
-- Epoch 136
Norm: 269.70, NNZs: 589993, Bias: -0.821435, T: 64855272, Avg. loss: 0.
320391
Total training time: 58.16 seconds.
-- Epoch 137
Norm: 269.69, NNZs: 589993, Bias: -0.825652, T: 65332149, Avg. loss: 0.
320361
Total training time: 58.57 seconds.
-- Epoch 138
Norm: 269.69, NNZs: 589993, Bias: -0.825149, T: 65809026, Avg. loss: 0.
320332
Total training time: 58.99 seconds.
-- Epoch 139
Norm: 269.69, NNZs: 589993, Bias: -0.817108, T: 66285903, Avg. loss: 0.
320303
Total training time: 59.44 seconds.
-- Epoch 140
Norm: 269.69, NNZs: 589993, Bias: -0.830199, T: 66762780, Avg. loss: 0.
320274
Total training time: 59.87 seconds.
-- Epoch 141
Norm: 269.68, NNZs: 589993, Bias: -0.824864, T: 67239657, Avg. loss: 0.
320246
Total training time: 60.32 seconds.
-- Epoch 142
Norm: 269.68, NNZs: 589993, Bias: -0.828762, T: 67716534, Avg. loss: 0.
320218
```

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Total training time: 60.79 seconds.
-- Epoch 143
Norm: 269.68, NNZs: 589993, Bias: -0.830417, T: 68193411, Avg. loss: 0.
320191
Total training time: 61.21 seconds.
-- Epoch 144
Norm: 269.67, NNZs: 589993, Bias: -0.821691, T: 68670288, Avg. loss: 0.
320164
Total training time: 61.62 seconds.
-- Epoch 145
Norm: 269.67, NNZs: 589993, Bias: -0.817857, T: 69147165, Avg. loss: 0.
320137
Total training time: 62.04 seconds.
-- Epoch 146
Norm: 269.67, NNZs: 589993, Bias: -0.824348, T: 69624042, Avg. loss: 0.
320111
Total training time: 62.45 seconds.
-- Epoch 147
Norm: 269.67, NNZs: 589993, Bias: -0.824816, T: 70100919, Avg. loss: 0.
320085
Total training time: 62.87 seconds.
-- Epoch 148
Norm: 269.66, NNZs: 589993, Bias: -0.821113, T: 70577796, Avg. loss: 0.
320059
Total training time: 63.30 seconds.
-- Epoch 149
Norm: 269.66, NNZs: 589993, Bias: -0.833215, T: 71054673, Avg. loss: 0.
320033
Total training time: 63.71 seconds.
-- Epoch 150
Norm: 269.66, NNZs: 589993, Bias: -0.823210, T: 71531550, Avg. loss: 0.
320008
Total training time: 64.12 seconds.
-- Epoch 151
Norm: 269.66, NNZs: 589993, Bias: -0.823823, T: 72008427, Avg. loss: 0.
319983
Total training time: 64.53 seconds.
-- Epoch 152
Norm: 269.65, NNZs: 589993, Bias: -0.824022, T: 72485304, Avg. loss: 0.
319959
Total training time: 64.94 seconds.
-- Epoch 153
Norm: 269.65, NNZs: 589993, Bias: -0.821605, T: 72962181, Avg. loss: 0.
319935
Total training time: 65.36 seconds.
-- Epoch 154
Norm: 269.64, NNZs: 589993, Bias: -0.829415, T: 73439058, Avg. loss: 0.
319911
Total training time: 65.77 seconds.
-- Epoch 155
Norm: 269.64, NNZs: 589993, Bias: -0.828377, T: 73915935, Avg. loss: 0.
319887
Total training time: 66.18 seconds.
-- Epoch 156
Norm: 269.64, NNZs: 589993, Bias: -0.822320, T: 74392812, Avg. loss: 0.
319864
Total training time: 66.61 seconds.
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-- Epoch 157
Norm: 269.64, NNZs: 589993, Bias: -0.835368, T: 74869689, Avg. loss: 0.
319841
Total training time: 67.07 seconds.
-- Epoch 158
Norm: 269.63, NNZs: 589993, Bias: -0.827410, T: 75346566, Avg. loss: 0.
319818
Total training time: 67.48 seconds.
-- Epoch 159
Norm: 269.63, NNZs: 589993, Bias: -0.828499, T: 75823443, Avg. loss: 0.
319796
Total training time: 67.89 seconds.
-- Epoch 160
Norm: 269.63, NNZs: 589993, Bias: -0.826743, T: 76300320, Avg. loss: 0.
319774
Total training time: 68.31 seconds.
-- Epoch 161
Norm: 269.63, NNZs: 589993, Bias: -0.832122, T: 76777197, Avg. loss: 0.
319752
Total training time: 68.78 seconds.
-- Epoch 162
Norm: 269.63, NNZs: 589993, Bias: -0.825382, T: 77254074, Avg. loss: 0.
319730
Total training time: 69.19 seconds.
-- Epoch 163
Norm: 269.62, NNZs: 589993, Bias: -0.828387, T: 77730951, Avg. loss: 0.
319709
Total training time: 69.65 seconds.
-- Epoch 164
Norm: 269.62, NNZs: 589993, Bias: -0.827100, T: 78207828, Avg. loss: 0.
319687
Total training time: 70.12 seconds.
-- Epoch 165
Norm: 269.62, NNZs: 589993, Bias: -0.826864, T: 78684705, Avg. loss: 0.
319666
Total training time: 70.61 seconds.
-- Epoch 166
Norm: 269.62, NNZs: 589993, Bias: -0.824768, T: 79161582, Avg. loss: 0.
319646
Total training time: 71.02 seconds.
-- Epoch 167
Norm: 269.62, NNZs: 589993, Bias: -0.824945, T: 79638459, Avg. loss: 0.
319625
Total training time: 71.46 seconds.
-- Epoch 168
Norm: 269.61, NNZs: 589993, Bias: -0.826916, T: 80115336, Avg. loss: 0.
319605
Total training time: 71.86 seconds.
-- Epoch 169
Norm: 269.61, NNZs: 589993, Bias: -0.829945, T: 80592213, Avg. loss: 0.
319585
Total training time: 72.33 seconds.
-- Epoch 170
Norm: 269.61, NNZs: 589993, Bias: -0.823487, T: 81069090, Avg. loss: 0.
319565
Total training time: 72.73 seconds.
-- Epoch 171
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Norm: 269.61, NNZs: 589993, Bias: -0.825734, T: 81545967, Avg. loss: 0.
319545
Total training time: 73.15 seconds.
-- Epoch 172
Norm: 269.60, NNZs: 589993, Bias: -0.825284, T: 82022844, Avg. loss: 0.
319526
Total training time: 73.62 seconds.
-- Epoch 173
Norm: 269.60, NNZs: 589993, Bias: -0.820467, T: 82499721, Avg. loss: 0.
319507
Total training time: 74.03 seconds.
-- Epoch 174
Norm: 269.60, NNZs: 589993, Bias: -0.822199, T: 82976598, Avg. loss: 0.
319488
Total training time: 74.45 seconds.
-- Epoch 175
Norm: 269.60, NNZs: 589993, Bias: -0.824040, T: 83453475, Avg. loss: 0.
319469
Total training time: 74.86 seconds.
-- Epoch 176
Norm: 269.60, NNZs: 589993, Bias: -0.821993, T: 83930352, Avg. loss: 0.
319450
Total training time: 75.30 seconds.
-- Epoch 177
Norm: 269.59, NNZs: 589993, Bias: -0.823730, T: 84407229, Avg. loss: 0.
319432
Total training time: 75.73 seconds.
-- Epoch 178
Norm: 269.59, NNZs: 589993, Bias: -0.826904, T: 84884106, Avg. loss: 0.
319414
Total training time: 76.14 seconds.
-- Epoch 179
Norm: 269.59, NNZs: 589993, Bias: -0.824815, T: 85360983, Avg. loss: 0.
319396
Total training time: 76.55 seconds.
-- Epoch 180
Norm: 269.59, NNZs: 589993, Bias: -0.820993, T: 85837860, Avg. loss: 0.
319378
Total training time: 77.00 seconds.
-- Epoch 181
Norm: 269.59, NNZs: 589993, Bias: -0.824337, T: 86314737, Avg. loss: 0.
319360
Total training time: 77.48 seconds.
-- Epoch 182
Norm: 269.59, NNZs: 589993, Bias: -0.819861, T: 86791614, Avg. loss: 0.
319343
Total training time: 77.94 seconds.
-- Epoch 183
Norm: 269.58, NNZs: 589993, Bias: -0.829566, T: 87268491, Avg. loss: 0.
319326
Total training time: 78.42 seconds.
-- Epoch 184
Norm: 269.58, NNZs: 589993, Bias: -0.827271, T: 87745368, Avg. loss: 0.
319309
Total training time: 78.92 seconds.
-- Epoch 185
Norm: 269.58, NNZs: 589993, Bias: -0.825570, T: 88222245, Avg. loss: 0.
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319292
Total training time: 79.41 seconds.
-- Epoch 186
Norm: 269.58, NNZs: 589993, Bias: -0.824335, T: 88699122, Avg. loss: 0.
319275
Total training time: 79.88 seconds.
-- Epoch 187
Norm: 269.57, NNZs: 589993, Bias: -0.831717, T: 89175999, Avg. loss: 0.
319258
Total training time: 80.36 seconds.
-- Epoch 188
Norm: 269.57, NNZs: 589993, Bias: -0.824883, T: 89652876, Avg. loss: 0.
319242
Total training time: 80.84 seconds.
-- Epoch 189
Norm: 269.57, NNZs: 589993, Bias: -0.824252, T: 90129753, Avg. loss: 0.
319226
Total training time: 81.31 seconds.
-- Epoch 190
Norm: 269.57, NNZs: 589993, Bias: -0.828236, T: 90606630, Avg. loss: 0.
319210
Total training time: 81.73 seconds.
-- Epoch 191
Norm: 269.57, NNZs: 589993, Bias: -0.824487, T: 91083507, Avg. loss: 0.
319194
Total training time: 82.13 seconds.
-- Epoch 192
Norm: 269.57, NNZs: 589993, Bias: -0.824158, T: 91560384, Avg. loss: 0.
319178
Total training time: 82.54 seconds.
-- Epoch 193
Norm: 269.56, NNZs: 589993, Bias: -0.823143, T: 92037261, Avg. loss: 0.
319162
Total training time: 82.94 seconds.
-- Epoch 194
Norm: 269.56, NNZs: 589993, Bias: -0.832011, T: 92514138, Avg. loss: 0.
319147
Total training time: 83.35 seconds.
-- Epoch 195
Norm: 269.56, NNZs: 589993, Bias: -0.824623, T: 92991015, Avg. loss: 0.
319131
Total training time: 83.78 seconds.
-- Epoch 196
Norm: 269.56, NNZs: 589993, Bias: -0.829870, T: 93467892, Avg. loss: 0.
319116
Total training time: 84.19 seconds.
-- Epoch 197
Norm: 269.56, NNZs: 589993, Bias: -0.828167, T: 93944769, Avg. loss: 0.
319101
Total training time: 84.60 seconds.
-- Epoch 198
Norm: 269.56, NNZs: 589993, Bias: -0.827850, T: 94421646, Avg. loss: 0.
319086
Total training time: 85.01 seconds.
-- Epoch 199
Norm: 269.55, NNZs: 589993, Bias: -0.825644, T: 94898523, Avg. loss: 0.
319072
```

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Total training time: 85.41 seconds.
-- Epoch 200
Norm: 269.55, NNZs: 589993, Bias: -0.832873, T: 95375400, Avg. loss: 0.
319057
Total training time: 85.88 seconds.
-- Epoch 201
Norm: 269.55, NNZs: 589993, Bias: -0.829251, T: 95852277, Avg. loss: 0.
319043
Total training time: 86.34 seconds.
-- Epoch 202
Norm: 269.55, NNZs: 589993, Bias: -0.828777, T: 96329154, Avg. loss: 0.
319028
Total training time: 86.77 seconds.
-- Epoch 203
Norm: 269.55, NNZs: 589993, Bias: -0.827606, T: 96806031, Avg. loss: 0.
319014
Total training time: 87.18 seconds.
-- Epoch 204
Norm: 269.55, NNZs: 589993, Bias: -0.828109, T: 97282908, Avg. loss: 0.
319000
Total training time: 87.59 seconds.
-- Epoch 205
Norm: 269.55, NNZs: 589993, Bias: -0.828891, T: 97759785, Avg. loss: 0.
318986
Total training time: 88.00 seconds.
-- Epoch 206
Norm: 269.54, NNZs: 589993, Bias: -0.824618, T: 98236662, Avg. loss: 0.
318972
Total training time: 88.41 seconds.
-- Epoch 207
Norm: 269.54, NNZs: 589993, Bias: -0.830533, T: 98713539, Avg. loss: 0.
318958
Total training time: 88.85 seconds.
-- Epoch 208
Norm: 269.54, NNZs: 589993, Bias: -0.827929, T: 99190416, Avg. loss: 0.
318945
Total training time: 89.28 seconds.
-- Epoch 209
Norm: 269.54, NNZs: 589993, Bias: -0.826489, T: 99667293, Avg. loss: 0.
318931
Total training time: 89.69 seconds.
-- Epoch 210
Norm: 269.54, NNZs: 589993, Bias: -0.828896, T: 100144170, Avg. loss:
0.318918
Total training time: 90.10 seconds.
-- Epoch 211
Norm: 269.54, NNZs: 589993, Bias: -0.821987, T: 100621047, Avg. loss:
0.318905
Total training time: 90.51 seconds.
-- Epoch 212
Norm: 269.54, NNZs: 589993, Bias: -0.826448, T: 101097924, Avg. loss:
0.318892
Total training time: 90.92 seconds.
-- Epoch 213
Norm: 269.54, NNZs: 589993, Bias: -0.823308, T: 101574801, Avg. loss:
0.318879
Total training time: 91.33 seconds.
```

```
-- Epoch 214
Norm: 269.53, NNZs: 589993, Bias: -0.830780, T: 102051678, Avg. loss:
0.318866
Total training time: 91.74 seconds.
-- Epoch 215
Norm: 269.53, NNZs: 589993, Bias: -0.830368, T: 102528555, Avg. loss:
0.318853
Total training time: 92.15 seconds.
-- Epoch 216
Norm: 269.53, NNZs: 589993, Bias: -0.829222, T: 103005432, Avg. loss:
0.318841
Total training time: 92.59 seconds.
-- Epoch 217
Norm: 269.53, NNZs: 589993, Bias: -0.821612, T: 103482309, Avg. loss:
0.318828
Total training time: 93.02 seconds.
-- Epoch 218
Norm: 269.53, NNZs: 589993, Bias: -0.823595, T: 103959186, Avg. loss:
0.318816
Total training time: 93.46 seconds.
-- Epoch 219
Norm: 269.53, NNZs: 589993, Bias: -0.828302, T: 104436063, Avg. loss:
0.318803
Total training time: 93.96 seconds.
-- Epoch 220
Norm: 269.53, NNZs: 589993, Bias: -0.824858, T: 104912940, Avg. loss:
0.318791
Total training time: 94.46 seconds.
-- Epoch 221
Norm: 269.52, NNZs: 589993, Bias: -0.827173, T: 105389817, Avg. loss:
0.318779
Total training time: 94.98 seconds.
-- Epoch 222
Norm: 269.52, NNZs: 589993, Bias: -0.831948, T: 105866694, Avg. loss:
0.318767
Total training time: 95.50 seconds.
-- Epoch 223
Norm: 269.52, NNZs: 589993, Bias: -0.825069, T: 106343571, Avg. loss:
0.318755
Total training time: 95.98 seconds.
-- Epoch 224
Norm: 269.52, NNZs: 589993, Bias: -0.827151, T: 106820448, Avg. loss:
0.318743
Total training time: 96.39 seconds.
-- Epoch 225
Norm: 269.52, NNZs: 589993, Bias: -0.828773, T: 107297325, Avg. loss:
0.318731
Total training time: 96.81 seconds.
-- Epoch 226
Norm: 269.52, NNZs: 589993, Bias: -0.829115, T: 107774202, Avg. loss:
0.318720
Total training time: 97.27 seconds.
-- Epoch 227
Norm: 269.51, NNZs: 589993, Bias: -0.830263, T: 108251079, Avg. loss:
0.318708
Total training time: 97.74 seconds.
-- Epoch 228
```

```
Norm: 269.51, NNZs: 589993, Bias: -0.824440, T: 108727956, Avg. loss:
0.318697
Total training time: 98.21 seconds.
-- Epoch 229
Norm: 269.51, NNZs: 589993, Bias: -0.823691, T: 109204833, Avg. loss:
0.318685
Total training time: 98.67 seconds.
-- Epoch 230
Norm: 269.51, NNZs: 589993, Bias: -0.826554, T: 109681710, Avg. loss:
0.318674
Total training time: 99.10 seconds.
-- Epoch 231
Norm: 269.51, NNZs: 589993, Bias: -0.824847, T: 110158587, Avg. loss:
0.318663
Total training time: 99.52 seconds.
-- Epoch 232
Norm: 269.51, NNZs: 589993, Bias: -0.820360, T: 110635464, Avg. loss:
0.318652
Total training time: 99.94 seconds.
-- Epoch 233
Norm: 269.51, NNZs: 589993, Bias: -0.824870, T: 111112341, Avg. loss:
0.318641
Total training time: 100.36 seconds.
-- Epoch 234
Norm: 269.51, NNZs: 589993, Bias: -0.824280, T: 111589218, Avg. loss:
0.318630
Total training time: 100.78 seconds.
-- Epoch 235
Norm: 269.51, NNZs: 589993, Bias: -0.822903, T: 112066095, Avg. loss:
0.318619
Total training time: 101.20 seconds.
-- Epoch 236
Norm: 269.51, NNZs: 589993, Bias: -0.822883, T: 112542972, Avg. loss:
0.318609
Total training time: 101.61 seconds.
-- Epoch 237
Norm: 269.50, NNZs: 589993, Bias: -0.824245, T: 113019849, Avg. loss:
0.318598
Total training time: 102.04 seconds.
-- Epoch 238
Norm: 269.50, NNZs: 589993, Bias: -0.822459, T: 113496726, Avg. loss:
0.318588
Total training time: 102.46 seconds.
-- Epoch 239
Norm: 269.50, NNZs: 589993, Bias: -0.821800, T: 113973603, Avg. loss:
0.318577
Total training time: 102.87 seconds.
-- Epoch 240
Norm: 269.50, NNZs: 589993, Bias: -0.824385, T: 114450480, Avg. loss:
0.318567
Total training time: 103.29 seconds.
-- Epoch 241
Norm: 269.50, NNZs: 589993, Bias: -0.827270, T: 114927357, Avg. loss:
0.318556
Total training time: 103.71 seconds.
-- Epoch 242
Norm: 269.50, NNZs: 589993, Bias: -0.830878, T: 115404234, Avg. loss:
```

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0.318546
Total training time: 104.12 seconds.
-- Epoch 243
Norm: 269.50, NNZs: 589993, Bias: -0.828037, T: 115881111, Avg. loss:
0.318536
Total training time: 104.59 seconds.
-- Epoch 244
Norm: 269.50, NNZs: 589993, Bias: -0.829045, T: 116357988, Avg. loss:
0.318526
Total training time: 105.05 seconds.
-- Epoch 245
Norm: 269.50, NNZs: 589993, Bias: -0.828355, T: 116834865, Avg. loss:
0.318516
Total training time: 105.50 seconds.
-- Epoch 246
Norm: 269.49, NNZs: 589993, Bias: -0.830182, T: 117311742, Avg. loss:
0.318506
Total training time: 105.91 seconds.
-- Epoch 247
Norm: 269.49, NNZs: 589993, Bias: -0.826044, T: 117788619, Avg. loss:
0.318496
Total training time: 106.32 seconds.
-- Epoch 248
Norm: 269.49, NNZs: 589993, Bias: -0.828874, T: 118265496, Avg. loss:
0.318487
Total training time: 106.74 seconds.
-- Epoch 249
Norm: 269.49, NNZs: 589993, Bias: -0.825325, T: 118742373, Avg. loss:
0.318477
Total training time: 107.15 seconds.
-- Epoch 250
Norm: 269.49, NNZs: 589993, Bias: -0.824106, T: 119219250, Avg. loss:
0.318467
Total training time: 107.60 seconds.
-- Epoch 1
Norm: 365.55, NNZs: 589993, Bias: -0.060301, T: 476877, Avg. loss: 0.95
9625
Total training time: 0.44 seconds.
-- Epoch 2
Norm: 315.47, NNZs: 589993, Bias: -0.213572, T: 953754, Avg. loss: 0.74
8372
Total training time: 0.85 seconds.
-- Epoch 3
Norm: 302.27, NNZs: 589993, Bias: -0.023078, T: 1430631, Avg. loss: 0.6
67738
Total training time: 1.26 seconds.
-- Epoch 4
Norm: 296.16, NNZs: 589993, Bias: -0.117702, T: 1907508, Avg. loss: 0.6
24429
Total training time: 1.68 seconds.
-- Epoch 5
Norm: 292.72, NNZs: 589993, Bias: -0.024860, T: 2384385, Avg. loss: 0.5
97160
Total training time: 2.10 seconds.
-- Epoch 6
Norm: 290.54, NNZs: 589993, Bias: -0.133047, T: 2861262, Avg. loss: 0.5
78311
```

```
Total training time: 2.52 seconds.
-- Epoch 7
Norm: 288.99, NNZs: 589993, Bias: -0.146026, T: 3338139, Avg. loss: 0.5
64443
Total training time: 2.93 seconds.
-- Epoch 8
Norm: 287.74, NNZs: 589993, Bias: -0.055492, T: 3815016, Avg. loss: 0.5
53805
Total training time: 3.35 seconds.
-- Epoch 9
Norm: 286.89, NNZs: 589993, Bias: -0.103784, T: 4291893, Avg. loss: 0.5
45355
Total training time: 3.75 seconds.
-- Epoch 10
Norm: 286.12, NNZs: 589993, Bias: -0.067421, T: 4768770, Avg. loss: 0.5
38461
Total training time: 4.16 seconds.
-- Epoch 11
Norm: 285.58, NNZs: 589993, Bias: -0.092940, T: 5245647, Avg. loss: 0.5
32723
Total training time: 4.58 seconds.
-- Epoch 12
Norm: 285.09, NNZs: 589993, Bias: -0.061930, T: 5722524, Avg. loss: 0.5
27873
Total training time: 4.99 seconds.
-- Epoch 13
Norm: 284.68, NNZs: 589993, Bias: -0.126058, T: 6199401, Avg. loss: 0.5
23721
Total training time: 5.40 seconds.
-- Epoch 14
Norm: 284.34, NNZs: 589993, Bias: -0.061863, T: 6676278, Avg. loss: 0.5
20117
Total training time: 5.89 seconds.
-- Epoch 15
Norm: 284.02, NNZs: 589993, Bias: -0.046038, T: 7153155, Avg. loss: 0.5
16960
Total training time: 6.35 seconds.
-- Epoch 16
Norm: 283.80, NNZs: 589993, Bias: -0.085544, T: 7630032, Avg. loss: 0.5
14169
Total training time: 6.86 seconds.
-- Epoch 17
Norm: 283.53, NNZs: 589993, Bias: -0.042054, T: 8106909, Avg. loss: 0.5
11683
Total training time: 7.30 seconds.
-- Epoch 18
Norm: 283.32, NNZs: 589993, Bias: -0.054213, T: 8583786, Avg. loss: 0.5
09453
Total training time: 7.71 seconds.
-- Epoch 19
Norm: 283.15, NNZs: 589993, Bias: -0.052453, T: 9060663, Avg. loss: 0.5
07441
Total training time: 8.12 seconds.
-- Epoch 20
Norm: 282.98, NNZs: 589993, Bias: -0.083073, T: 9537540, Avg. loss: 0.5
05615
Total training time: 8.53 seconds.
```

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-- Epoch 21
Norm: 282.81, NNZs: 589993, Bias: -0.054779, T: 10014417, Avg. loss: 0.
503951
Total training time: 8.94 seconds.
-- Epoch 22
Norm: 282.68, NNZs: 589993, Bias: -0.050199, T: 10491294, Avg. loss: 0.
502426
Total training time: 9.35 seconds.
-- Epoch 23
Norm: 282.57, NNZs: 589993, Bias: -0.061601, T: 10968171, Avg. loss: 0.
501025
Total training time: 9.76 seconds.
-- Epoch 24
Norm: 282.47, NNZs: 589993, Bias: -0.048591, T: 11445048, Avg. loss: 0.
499730
Total training time: 10.17 seconds.
-- Epoch 25
Norm: 282.34, NNZs: 589993, Bias: -0.075374, T: 11921925, Avg. loss: 0.
498533
Total training time: 10.58 seconds.
-- Epoch 26
Norm: 282.24, NNZs: 589993, Bias: -0.075132, T: 12398802, Avg. loss: 0.
497419
Total training time: 10.99 seconds.
-- Epoch 27
Norm: 282.14, NNZs: 589993, Bias: -0.093411, T: 12875679, Avg. loss: 0.
496385
Total training time: 11.39 seconds.
-- Epoch 28
Norm: 282.07, NNZs: 589993, Bias: -0.067883, T: 13352556, Avg. loss: 0.
495419
Total training time: 11.80 seconds.
-- Epoch 29
Norm: 281.99, NNZs: 589993, Bias: -0.105508, T: 13829433, Avg. loss: 0.
494515
Total training time: 12.22 seconds.
-- Epoch 30
Norm: 281.91, NNZs: 589993, Bias: -0.083108, T: 14306310, Avg. loss: 0.
493667
Total training time: 12.62 seconds.
-- Epoch 31
Norm: 281.84, NNZs: 589993, Bias: -0.060074, T: 14783187, Avg. loss: 0.
492868
Total training time: 13.03 seconds.
-- Epoch 32
Norm: 281.77, NNZs: 589993, Bias: -0.079552, T: 15260064, Avg. loss: 0.
492116
Total training time: 13.43 seconds.
-- Epoch 33
Norm: 281.70, NNZs: 589993, Bias: -0.074323, T: 15736941, Avg. loss: 0.
491408
Total training time: 13.84 seconds.
-- Epoch 34
Norm: 281.64, NNZs: 589993, Bias: -0.083138, T: 16213818, Avg. loss: 0.
490737
Total training time: 14.25 seconds.
-- Epoch 35
```

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Norm: 281.59, NNZs: 589993, Bias: -0.089116, T: 16690695, Avg. loss: 0.
490102
Total training time: 14.66 seconds.
-- Epoch 36
Norm: 281.53, NNZs: 589993, Bias: -0.076581, T: 17167572, Avg. loss: 0.
489500
Total training time: 15.07 seconds.
-- Epoch 37
Norm: 281.49, NNZs: 589993, Bias: -0.084262, T: 17644449, Avg. loss: 0.
488929
Total training time: 15.48 seconds.
-- Epoch 38
Norm: 281.44, NNZs: 589993, Bias: -0.083942, T: 18121326, Avg. loss: 0.
488385
Total training time: 15.95 seconds.
-- Epoch 39
Norm: 281.39, NNZs: 589993, Bias: -0.077829, T: 18598203, Avg. loss: 0.
487868
Total training time: 16.45 seconds.
-- Epoch 40
Norm: 281.34, NNZs: 589993, Bias: -0.075007, T: 19075080, Avg. loss: 0.
487374
Total training time: 16.95 seconds.
-- Epoch 41
Norm: 281.31, NNZs: 589993, Bias: -0.066331, T: 19551957, Avg. loss: 0.
486903
Total training time: 17.47 seconds.
-- Epoch 42
Norm: 281.26, NNZs: 589993, Bias: -0.067890, T: 20028834, Avg. loss: 0.
486453
Total training time: 17.93 seconds.
-- Epoch 43
Norm: 281.22, NNZs: 589993, Bias: -0.067616, T: 20505711, Avg. loss: 0.
486022
Total training time: 18.38 seconds.
-- Epoch 44
Norm: 281.20, NNZs: 589993, Bias: -0.080023, T: 20982588, Avg. loss: 0.
485609
Total training time: 18.80 seconds.
-- Epoch 45
Norm: 281.16, NNZs: 589993, Bias: -0.076877, T: 21459465, Avg. loss: 0.
485213
Total training time: 19.35 seconds.
-- Epoch 46
Norm: 281.14, NNZs: 589993, Bias: -0.093015, T: 21936342, Avg. loss: 0.
484833
Total training time: 19.81 seconds.
-- Epoch 47
Norm: 281.10, NNZs: 589993, Bias: -0.084218, T: 22413219, Avg. loss: 0.
484469
Total training time: 20.24 seconds.
-- Epoch 48
Norm: 281.07, NNZs: 589993, Bias: -0.090288, T: 22890096, Avg. loss: 0.
484119
Total training time: 20.67 seconds.
-- Epoch 49
Norm: 281.03, NNZs: 589993, Bias: -0.058043, T: 23366973, Avg. loss: 0.
```

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483782
Total training time: 21.13 seconds.
-- Epoch 50
Norm: 281.01, NNZs: 589993, Bias: -0.079984, T: 23843850, Avg. loss: 0.
483457
Total training time: 21.71 seconds.
-- Epoch 51
Norm: 280.98, NNZs: 589993, Bias: -0.079156, T: 24320727, Avg. loss: 0.
483144
Total training time: 22.19 seconds.
-- Epoch 52
Norm: 280.95, NNZs: 589993, Bias: -0.060823, T: 24797604, Avg. loss: 0.
482843
Total training time: 22.63 seconds.
-- Epoch 53
Norm: 280.93, NNZs: 589993, Bias: -0.075609, T: 25274481, Avg. loss: 0.
482552
Total training time: 23.05 seconds.
-- Epoch 54
Norm: 280.91, NNZs: 589993, Bias: -0.056794, T: 25751358, Avg. loss: 0.
482271
Total training time: 23.46 seconds.
-- Epoch 55
Norm: 280.89, NNZs: 589993, Bias: -0.074207, T: 26228235, Avg. loss: 0.
482000
Total training time: 23.88 seconds.
-- Epoch 56
Norm: 280.86, NNZs: 589993, Bias: -0.096334, T: 26705112, Avg. loss: 0.
481738
Total training time: 24.36 seconds.
-- Epoch 57
Norm: 280.84, NNZs: 589993, Bias: -0.086599, T: 27181989, Avg. loss: 0.
481484
Total training time: 24.83 seconds.
-- Epoch 58
Norm: 280.82, NNZs: 589993, Bias: -0.070919, T: 27658866, Avg. loss: 0.
481239
Total training time: 25.29 seconds.
-- Epoch 59
Norm: 280.80, NNZs: 589993, Bias: -0.073457, T: 28135743, Avg. loss: 0.
481001
Total training time: 25.74 seconds.
-- Epoch 60
Norm: 280.79, NNZs: 589993, Bias: -0.092560, T: 28612620, Avg. loss: 0.
480771
Total training time: 26.16 seconds.
-- Epoch 61
Norm: 280.77, NNZs: 589993, Bias: -0.065333, T: 29089497, Avg. loss: 0.
480547
Total training time: 26.57 seconds.
-- Epoch 62
Norm: 280.75, NNZs: 589993, Bias: -0.071696, T: 29566374, Avg. loss: 0.
480331
Total training time: 27.05 seconds.
-- Epoch 63
Norm: 280.72, NNZs: 589993, Bias: -0.084167, T: 30043251, Avg. loss: 0.
480120
```

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Total training time: 27.48 seconds.
-- Epoch 64
Norm: 280.71, NNZs: 589993, Bias: -0.088159, T: 30520128, Avg. loss: 0.
479916
Total training time: 27.89 seconds.
-- Epoch 65
Norm: 280.70, NNZs: 589993, Bias: -0.065858, T: 30997005, Avg. loss: 0.
479718
Total training time: 28.30 seconds.
-- Epoch 66
Norm: 280.68, NNZs: 589993, Bias: -0.070439, T: 31473882, Avg. loss: 0.
479525
Total training time: 28.71 seconds.
-- Epoch 67
Norm: 280.65, NNZs: 589993, Bias: -0.054278, T: 31950759, Avg. loss: 0.
479337
Total training time: 29.13 seconds.
-- Epoch 68
Norm: 280.64, NNZs: 589993, Bias: -0.079883, T: 32427636, Avg. loss: 0.
479155
Total training time: 29.58 seconds.
-- Epoch 69
Norm: 280.62, NNZs: 589993, Bias: -0.078502, T: 32904513, Avg. loss: 0.
478978
Total training time: 30.04 seconds.
-- Epoch 70
Norm: 280.62, NNZs: 589993, Bias: -0.071177, T: 33381390, Avg. loss: 0.
478805
Total training time: 30.48 seconds.
-- Epoch 71
Norm: 280.60, NNZs: 589993, Bias: -0.068548, T: 33858267, Avg. loss: 0.
478637
Total training time: 30.92 seconds.
-- Epoch 72
Norm: 280.58, NNZs: 589993, Bias: -0.068034, T: 34335144, Avg. loss: 0.
478474
Total training time: 31.38 seconds.
-- Epoch 73
Norm: 280.57, NNZs: 589993, Bias: -0.068884, T: 34812021, Avg. loss: 0.
478314
Total training time: 31.79 seconds.
-- Epoch 74
Norm: 280.56, NNZs: 589993, Bias: -0.080564, T: 35288898, Avg. loss: 0.
478159
Total training time: 32.20 seconds.
-- Epoch 75
Norm: 280.53, NNZs: 589993, Bias: -0.076509, T: 35765775, Avg. loss: 0.
478008
Total training time: 32.67 seconds.
-- Epoch 76
Norm: 280.53, NNZs: 589993, Bias: -0.076859, T: 36242652, Avg. loss: 0.
477860
Total training time: 33.13 seconds.
-- Epoch 77
Norm: 280.51, NNZs: 589993, Bias: -0.070727, T: 36719529, Avg. loss: 0.
477715
Total training time: 33.58 seconds.
```

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-- Epoch 78
Norm: 280.50, NNZs: 589993, Bias: -0.073518, T: 37196406, Avg. loss: 0.
477574
Total training time: 33.99 seconds.
-- Epoch 79
Norm: 280.49, NNZs: 589993, Bias: -0.059540, T: 37673283, Avg. loss: 0.
477436
Total training time: 34.40 seconds.
-- Epoch 80
Norm: 280.47, NNZs: 589993, Bias: -0.087066, T: 38150160, Avg. loss: 0.
477302
Total training time: 34.85 seconds.
-- Epoch 81
Norm: 280.47, NNZs: 589993, Bias: -0.081155, T: 38627037, Avg. loss: 0.
477171
Total training time: 35.28 seconds.
-- Epoch 82
Norm: 280.46, NNZs: 589993, Bias: -0.073979, T: 39103914, Avg. loss: 0.
477043
Total training time: 35.70 seconds.
-- Epoch 83
Norm: 280.44, NNZs: 589993, Bias: -0.067882, T: 39580791, Avg. loss: 0.
476918
Total training time: 36.15 seconds.
-- Epoch 84
Norm: 280.43, NNZs: 589993, Bias: -0.086608, T: 40057668, Avg. loss: 0.
476795
Total training time: 36.59 seconds.
-- Epoch 85
Norm: 280.42, NNZs: 589993, Bias: -0.071013, T: 40534545, Avg. loss: 0.
476675
Total training time: 37.05 seconds.
-- Epoch 86
Norm: 280.41, NNZs: 589993, Bias: -0.072867, T: 41011422, Avg. loss: 0.
476558
Total training time: 37.48 seconds.
-- Epoch 87
Norm: 280.40, NNZs: 589993, Bias: -0.069120, T: 41488299, Avg. loss: 0.
476443
Total training time: 37.95 seconds.
-- Epoch 88
Norm: 280.39, NNZs: 589993, Bias: -0.070649, T: 41965176, Avg. loss: 0.
476331
Total training time: 38.39 seconds.
-- Epoch 89
Norm: 280.38, NNZs: 589993, Bias: -0.066832, T: 42442053, Avg. loss: 0.
476221
Total training time: 38.81 seconds.
-- Epoch 90
Norm: 280.37, NNZs: 589993, Bias: -0.076394, T: 42918930, Avg. loss: 0.
476113
Total training time: 39.23 seconds.
-- Epoch 91
Norm: 280.37, NNZs: 589993, Bias: -0.075038, T: 43395807, Avg. loss: 0.
476008
Total training time: 39.66 seconds.
-- Epoch 92
```

```
Norm: 280.35, NNZs: 589993, Bias: -0.079960, T: 43872684, Avg. loss: 0.
475904
Total training time: 40.10 seconds.
-- Epoch 93
Norm: 280.35, NNZs: 589993, Bias: -0.072498, T: 44349561, Avg. loss: 0.
475803
Total training time: 40.56 seconds.
-- Epoch 94
Norm: 280.34, NNZs: 589993, Bias: -0.071795, T: 44826438, Avg. loss: 0.
475704
Total training time: 40.99 seconds.
-- Epoch 95
Norm: 280.33, NNZs: 589993, Bias: -0.070829, T: 45303315, Avg. loss: 0.
475607
Total training time: 41.40 seconds.
-- Epoch 96
Norm: 280.32, NNZs: 589993, Bias: -0.079415, T: 45780192, Avg. loss: 0.
475511
Total training time: 41.96 seconds.
-- Epoch 97
Norm: 280.31, NNZs: 589993, Bias: -0.065931, T: 46257069, Avg. loss: 0.
475418
Total training time: 42.41 seconds.
-- Epoch 98
Norm: 280.30, NNZs: 589993, Bias: -0.067427, T: 46733946, Avg. loss: 0.
475326
Total training time: 42.88 seconds.
-- Epoch 99
Norm: 280.29, NNZs: 589993, Bias: -0.056547, T: 47210823, Avg. loss: 0.
475236
Total training time: 43.33 seconds.
-- Epoch 100
Norm: 280.29, NNZs: 589993, Bias: -0.070063, T: 47687700, Avg. loss: 0.
475148
Total training time: 43.74 seconds.
-- Epoch 101
Norm: 280.28, NNZs: 589993, Bias: -0.071509, T: 48164577, Avg. loss: 0.
475061
Total training time: 44.16 seconds.
-- Epoch 102
Norm: 280.28, NNZs: 589993, Bias: -0.078836, T: 48641454, Avg. loss: 0.
474976
Total training time: 44.57 seconds.
-- Epoch 103
Norm: 280.27, NNZs: 589993, Bias: -0.079729, T: 49118331, Avg. loss: 0.
474892
Total training time: 44.98 seconds.
-- Epoch 104
Norm: 280.26, NNZs: 589993, Bias: -0.078697, T: 49595208, Avg. loss: 0.
474810
Total training time: 45.41 seconds.
-- Epoch 105
Norm: 280.25, NNZs: 589993, Bias: -0.074852, T: 50072085, Avg. loss: 0.
474730
Total training time: 45.97 seconds.
-- Epoch 106
Norm: 280.25, NNZs: 589993, Bias: -0.080771, T: 50548962, Avg. loss: 0.
```

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474650
Total training time: 46.41 seconds.
-- Epoch 107
Norm: 280.24, NNZs: 589993, Bias: -0.068624, T: 51025839, Avg. loss: 0.
474573
Total training time: 46.84 seconds.
-- Epoch 108
Norm: 280.23, NNZs: 589993, Bias: -0.073513, T: 51502716, Avg. loss: 0.
474496
Total training time: 47.32 seconds.
-- Epoch 109
Norm: 280.23, NNZs: 589993, Bias: -0.062761, T: 51979593, Avg. loss: 0.
474421
Total training time: 47.75 seconds.
-- Epoch 110
Norm: 280.22, NNZs: 589993, Bias: -0.074832, T: 52456470, Avg. loss: 0.
474347
Total training time: 48.19 seconds.
-- Epoch 111
Norm: 280.21, NNZs: 589993, Bias: -0.076981, T: 52933347, Avg. loss: 0.
474274
Total training time: 48.61 seconds.
-- Epoch 112
Norm: 280.21, NNZs: 589993, Bias: -0.080210, T: 53410224, Avg. loss: 0.
474203
Total training time: 49.04 seconds.
-- Epoch 113
Norm: 280.20, NNZs: 589993, Bias: -0.066784, T: 53887101, Avg. loss: 0.
474133
Total training time: 49.45 seconds.
-- Epoch 114
Norm: 280.20, NNZs: 589993, Bias: -0.086695, T: 54363978, Avg. loss: 0.
474064
Total training time: 49.88 seconds.
-- Epoch 115
Norm: 280.19, NNZs: 589993, Bias: -0.068567, T: 54840855, Avg. loss: 0.
473996
Total training time: 50.32 seconds.
-- Epoch 116
Norm: 280.19, NNZs: 589993, Bias: -0.076997, T: 55317732, Avg. loss: 0.
473929
Total training time: 50.77 seconds.
-- Epoch 117
Norm: 280.18, NNZs: 589993, Bias: -0.075698, T: 55794609, Avg. loss: 0.
473863
Total training time: 51.23 seconds.
-- Epoch 118
Norm: 280.17, NNZs: 589993, Bias: -0.074916, T: 56271486, Avg. loss: 0.
473798
Total training time: 51.67 seconds.
-- Epoch 119
Norm: 280.17, NNZs: 589993, Bias: -0.090681, T: 56748363, Avg. loss: 0.
473734
Total training time: 52.11 seconds.
-- Epoch 120
Norm: 280.17, NNZs: 589993, Bias: -0.088051, T: 57225240, Avg. loss: 0.
473672
```

```
Total training time: 52.53 seconds.
-- Epoch 121
Norm: 280.16, NNZs: 589993, Bias: -0.076878, T: 57702117, Avg. loss: 0.
473610
Total training time: 53.00 seconds.
-- Epoch 122
Norm: 280.15, NNZs: 589993, Bias: -0.064010, T: 58178994, Avg. loss: 0.
473549
Total training time: 53.45 seconds.
-- Epoch 123
Norm: 280.15, NNZs: 589993, Bias: -0.062898, T: 58655871, Avg. loss: 0.
473489
Total training time: 53.90 seconds.
-- Epoch 124
Norm: 280.14, NNZs: 589993, Bias: -0.073545, T: 59132748, Avg. loss: 0.
473430
Total training time: 54.41 seconds.
-- Epoch 125
Norm: 280.14, NNZs: 589993, Bias: -0.081499, T: 59609625, Avg. loss: 0.
473372
Total training time: 54.86 seconds.
-- Epoch 126
Norm: 280.13, NNZs: 589993, Bias: -0.072741, T: 60086502, Avg. loss: 0.
473315
Total training time: 55.29 seconds.
-- Epoch 127
Norm: 280.13, NNZs: 589993, Bias: -0.067297, T: 60563379, Avg. loss: 0.
473258
Total training time: 55.77 seconds.
-- Epoch 128
Norm: 280.12, NNZs: 589993, Bias: -0.076089, T: 61040256, Avg. loss: 0.
473203
Total training time: 56.21 seconds.
-- Epoch 129
Norm: 280.12, NNZs: 589993, Bias: -0.070239, T: 61517133, Avg. loss: 0.
473148
Total training time: 56.66 seconds.
-- Epoch 130
Norm: 280.11, NNZs: 589993, Bias: -0.074953, T: 61994010, Avg. loss: 0.
473094
Total training time: 57.12 seconds.
-- Epoch 131
Norm: 280.11, NNZs: 589993, Bias: -0.075340, T: 62470887, Avg. loss: 0.
473041
Total training time: 57.54 seconds.
-- Epoch 132
Norm: 280.10, NNZs: 589993, Bias: -0.070561, T: 62947764, Avg. loss: 0.
472989
Total training time: 58.01 seconds.
-- Epoch 133
Norm: 280.10, NNZs: 589993, Bias: -0.088375, T: 63424641, Avg. loss: 0.
472937
Total training time: 58.46 seconds.
-- Epoch 134
Norm: 280.10, NNZs: 589993, Bias: -0.075658, T: 63901518, Avg. loss: 0.
472886
Total training time: 58.89 seconds.
```

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-- Epoch 135
Norm: 280.09, NNZs: 589993, Bias: -0.066416, T: 64378395, Avg. loss: 0.
472836
Total training time: 59.33 seconds.
-- Epoch 136
Norm: 280.09, NNZs: 589993, Bias: -0.073423, T: 64855272, Avg. loss: 0.
472786
Total training time: 59.76 seconds.
-- Epoch 137
Norm: 280.08, NNZs: 589993, Bias: -0.069869, T: 65332149, Avg. loss: 0.
472737
Total training time: 60.20 seconds.
-- Epoch 138
Norm: 280.08, NNZs: 589993, Bias: -0.071632, T: 65809026, Avg. loss: 0.
472689
Total training time: 60.66 seconds.
-- Epoch 139
Norm: 280.08, NNZs: 589993, Bias: -0.069518, T: 66285903, Avg. loss: 0.
472641
Total training time: 61.09 seconds.
-- Epoch 140
Norm: 280.07, NNZs: 589993, Bias: -0.067302, T: 66762780, Avg. loss: 0.
472594
Total training time: 61.50 seconds.
-- Epoch 141
Norm: 280.07, NNZs: 589993, Bias: -0.083995, T: 67239657, Avg. loss: 0.
472548
Total training time: 61.92 seconds.
-- Epoch 142
Norm: 280.06, NNZs: 589993, Bias: -0.075697, T: 67716534, Avg. loss: 0.
472502
Total training time: 62.42 seconds.
-- Epoch 143
Norm: 280.06, NNZs: 589993, Bias: -0.060762, T: 68193411, Avg. loss: 0.
472457
Total training time: 62.87 seconds.
-- Epoch 144
Norm: 280.05, NNZs: 589993, Bias: -0.071950, T: 68670288, Avg. loss: 0.
472412
Total training time: 63.30 seconds.
-- Epoch 145
Norm: 280.05, NNZs: 589993, Bias: -0.078070, T: 69147165, Avg. loss: 0.
472368
Total training time: 63.71 seconds.
-- Epoch 146
Norm: 280.04, NNZs: 589993, Bias: -0.066204, T: 69624042, Avg. loss: 0.
472325
Total training time: 64.12 seconds.
-- Epoch 147
Norm: 280.04, NNZs: 589993, Bias: -0.071936, T: 70100919, Avg. loss: 0.
472282
Total training time: 64.53 seconds.
-- Epoch 148
Norm: 280.04, NNZs: 589993, Bias: -0.068462, T: 70577796, Avg. loss: 0.
472240
Total training time: 64.98 seconds.
-- Epoch 149
```

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Norm: 280.04, NNZs: 589993, Bias: -0.073136, T: 71054673, Avg. loss: 0.
472198
Total training time: 65.44 seconds.
-- Epoch 150
Norm: 280.03, NNZs: 589993, Bias: -0.070660, T: 71531550, Avg. loss: 0.
472157
Total training time: 65.90 seconds.
-- Epoch 151
Norm: 280.03, NNZs: 589993, Bias: -0.080079, T: 72008427, Avg. loss: 0.
472116
Total training time: 66.47 seconds.
-- Epoch 152
Norm: 280.02, NNZs: 589993, Bias: -0.077677, T: 72485304, Avg. loss: 0.
472076
Total training time: 66.94 seconds.
-- Epoch 153
Norm: 280.02, NNZs: 589993, Bias: -0.071613, T: 72962181, Avg. loss: 0.
472036
Total training time: 67.44 seconds.
-- Epoch 154
Norm: 280.02, NNZs: 589993, Bias: -0.073572, T: 73439058, Avg. loss: 0.
471997
Total training time: 67.90 seconds.
-- Epoch 155
Norm: 280.01, NNZs: 589993, Bias: -0.077011, T: 73915935, Avg. loss: 0.
471958
Total training time: 68.40 seconds.
-- Epoch 156
Norm: 280.01, NNZs: 589993, Bias: -0.073597, T: 74392812, Avg. loss: 0.
471920
Total training time: 68.86 seconds.
-- Epoch 157
Norm: 280.01, NNZs: 589993, Bias: -0.074218, T: 74869689, Avg. loss: 0.
471882
Total training time: 69.36 seconds.
-- Epoch 158
Norm: 280.01, NNZs: 589993, Bias: -0.069399, T: 75346566, Avg. loss: 0.
471844
Total training time: 69.84 seconds.
-- Epoch 159
Norm: 280.00, NNZs: 589993, Bias: -0.075214, T: 75823443, Avg. loss: 0.
471807
Total training time: 70.32 seconds.
-- Epoch 160
Norm: 280.00, NNZs: 589993, Bias: -0.076550, T: 76300320, Avg. loss: 0.
471771
Total training time: 70.79 seconds.
-- Epoch 161
Norm: 280.00, NNZs: 589993, Bias: -0.074022, T: 76777197, Avg. loss: 0.
471734
Total training time: 71.29 seconds.
-- Epoch 162
Norm: 280.00, NNZs: 589993, Bias: -0.070542, T: 77254074, Avg. loss: 0.
471699
Total training time: 71.72 seconds.
-- Epoch 163
Norm: 279.99, NNZs: 589993, Bias: -0.073007, T: 77730951, Avg. loss: 0.
```

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471664
Total training time: 72.14 seconds.
-- Epoch 164
Norm: 279.99, NNZs: 589993, Bias: -0.076189, T: 78207828, Avg. loss: 0.
471629
Total training time: 72.56 seconds.
-- Epoch 165
Norm: 279.99, NNZs: 589993, Bias: -0.075647, T: 78684705, Avg. loss: 0.
471594
Total training time: 72.97 seconds.
-- Epoch 166
Norm: 279.98, NNZs: 589993, Bias: -0.074991, T: 79161582, Avg. loss: 0.
471560
Total training time: 73.40 seconds.
-- Epoch 167
Norm: 279.98, NNZs: 589993, Bias: -0.073893, T: 79638459, Avg. loss: 0.
471526
Total training time: 73.86 seconds.
-- Epoch 168
Norm: 279.98, NNZs: 589993, Bias: -0.067416, T: 80115336, Avg. loss: 0.
471493
Total training time: 74.27 seconds.
-- Epoch 169
Norm: 279.97, NNZs: 589993, Bias: -0.083350, T: 80592213, Avg. loss: 0.
471460
Total training time: 74.70 seconds.
-- Epoch 170
Norm: 279.97, NNZs: 589993, Bias: -0.076704, T: 81069090, Avg. loss: 0.
471427
Total training time: 75.13 seconds.
-- Epoch 171
Norm: 279.97, NNZs: 589993, Bias: -0.079222, T: 81545967, Avg. loss: 0.
471395
Total training time: 75.55 seconds.
-- Epoch 172
Norm: 279.96, NNZs: 589993, Bias: -0.071656, T: 82022844, Avg. loss: 0.
471363
Total training time: 75.97 seconds.
-- Epoch 173
Norm: 279.96, NNZs: 589993, Bias: -0.076395, T: 82499721, Avg. loss: 0.
471332
Total training time: 76.40 seconds.
-- Epoch 174
Norm: 279.96, NNZs: 589993, Bias: -0.073622, T: 82976598, Avg. loss: 0.
471300
Total training time: 76.82 seconds.
-- Epoch 175
Norm: 279.96, NNZs: 589993, Bias: -0.071827, T: 83453475, Avg. loss: 0.
471269
Total training time: 77.24 seconds.
-- Epoch 176
Norm: 279.95, NNZs: 589993, Bias: -0.069826, T: 83930352, Avg. loss: 0.
471239
Total training time: 77.66 seconds.
-- Epoch 177
Norm: 279.95, NNZs: 589993, Bias: -0.074025, T: 84407229, Avg. loss: 0.
471209
```

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Total training time: 78.08 seconds.
-- Epoch 178
Norm: 279.95, NNZs: 589993, Bias: -0.076989, T: 84884106, Avg. loss: 0.
471179
Total training time: 78.50 seconds.
-- Epoch 179
Norm: 279.94, NNZs: 589993, Bias: -0.078889, T: 85360983, Avg. loss: 0.
471149
Total training time: 78.95 seconds.
-- Epoch 180
Norm: 279.94, NNZs: 589993, Bias: -0.076894, T: 85837860, Avg. loss: 0.
471120
Total training time: 79.37 seconds.
-- Epoch 181
Norm: 279.94, NNZs: 589993, Bias: -0.078867, T: 86314737, Avg. loss: 0.
471091
Total training time: 79.83 seconds.
-- Epoch 182
Norm: 279.94, NNZs: 589993, Bias: -0.075394, T: 86791614, Avg. loss: 0.
471062
Total training time: 80.31 seconds.
-- Epoch 183
Norm: 279.94, NNZs: 589993, Bias: -0.077876, T: 87268491, Avg. loss: 0.
471034
Total training time: 80.78 seconds.
-- Epoch 184
Norm: 279.93, NNZs: 589993, Bias: -0.072796, T: 87745368, Avg. loss: 0.
471005
Total training time: 81.23 seconds.
-- Epoch 185
Norm: 279.93, NNZs: 589993, Bias: -0.075023, T: 88222245, Avg. loss: 0.
470978
Total training time: 81.72 seconds.
-- Epoch 186
Norm: 279.93, NNZs: 589993, Bias: -0.072128, T: 88699122, Avg. loss: 0.
470950
Total training time: 82.17 seconds.
-- Epoch 187
Norm: 279.93, NNZs: 589993, Bias: -0.067535, T: 89175999, Avg. loss: 0.
470923
Total training time: 82.62 seconds.
-- Epoch 188
Norm: 279.92, NNZs: 589993, Bias: -0.072938, T: 89652876, Avg. loss: 0.
470896
Total training time: 83.07 seconds.
-- Epoch 189
Norm: 279.92, NNZs: 589993, Bias: -0.078144, T: 90129753, Avg. loss: 0.
470869
Total training time: 83.54 seconds.
-- Epoch 190
Norm: 279.92, NNZs: 589993, Bias: -0.076089, T: 90606630, Avg. loss: 0.
470843
Total training time: 84.02 seconds.
-- Epoch 191
Norm: 279.92, NNZs: 589993, Bias: -0.072938, T: 91083507, Avg. loss: 0.
470816
Total training time: 84.45 seconds.
```

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-- Epoch 192
Norm: 279.92, NNZs: 589993, Bias: -0.073344, T: 91560384, Avg. loss: 0.
470790
Total training time: 84.88 seconds.
-- Epoch 193
Norm: 279.91, NNZs: 589993, Bias: -0.081957, T: 92037261, Avg. loss: 0.
470765
Total training time: 85.30 seconds.
-- Epoch 194
Norm: 279.91, NNZs: 589993, Bias: -0.068082, T: 92514138, Avg. loss: 0.
470739
Total training time: 85.78 seconds.
-- Epoch 195
Norm: 279.91, NNZs: 589993, Bias: -0.074305, T: 92991015, Avg. loss: 0.
470714
Total training time: 86.31 seconds.
-- Epoch 196
Norm: 279.91, NNZs: 589993, Bias: -0.079047, T: 93467892, Avg. loss: 0.
470689
Total training time: 86.92 seconds.
-- Epoch 197
Norm: 279.91, NNZs: 589993, Bias: -0.070198, T: 93944769, Avg. loss: 0.
470664
Total training time: 87.39 seconds.
-- Epoch 198
Norm: 279.90, NNZs: 589993, Bias: -0.078725, T: 94421646, Avg. loss: 0.
470640
Total training time: 87.88 seconds.
-- Epoch 199
Norm: 279.90, NNZs: 589993, Bias: -0.074564, T: 94898523, Avg. loss: 0.
470616
Total training time: 88.34 seconds.
-- Epoch 200
Norm: 279.90, NNZs: 589993, Bias: -0.079238, T: 95375400, Avg. loss: 0.
470592
Total training time: 88.78 seconds.
-- Epoch 201
Norm: 279.90, NNZs: 589993, Bias: -0.075200, T: 95852277, Avg. loss: 0.
470568
Total training time: 89.22 seconds.
-- Epoch 202
Norm: 279.89, NNZs: 589993, Bias: -0.079845, T: 96329154, Avg. loss: 0.
470544
Total training time: 89.68 seconds.
-- Epoch 203
Norm: 279.89, NNZs: 589993, Bias: -0.078447, T: 96806031, Avg. loss: 0.
470521
Total training time: 90.09 seconds.
-- Epoch 204
Norm: 279.89, NNZs: 589993, Bias: -0.074245, T: 97282908, Avg. loss: 0.
470498
Total training time: 90.53 seconds.
-- Epoch 205
Norm: 279.89, NNZs: 589993, Bias: -0.076542, T: 97759785, Avg. loss: 0.
470475
Total training time: 90.99 seconds.
-- Epoch 206
```

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Norm: 279.89, NNZs: 589993, Bias: -0.078123, T: 98236662, Avg. loss: 0.
470452
Total training time: 91.48 seconds.
-- Epoch 207
Norm: 279.89, NNZs: 589993, Bias: -0.072969, T: 98713539, Avg. loss: 0.
470430
Total training time: 91.92 seconds.
-- Epoch 208
Norm: 279.88, NNZs: 589993, Bias: -0.073596, T: 99190416, Avg. loss: 0.
470407
Total training time: 92.37 seconds.
-- Epoch 209
Norm: 279.88, NNZs: 589993, Bias: -0.070447, T: 99667293, Avg. loss: 0.
470385
Total training time: 92.81 seconds.
-- Epoch 210
Norm: 279.88, NNZs: 589993, Bias: -0.074988, T: 100144170, Avg. loss:
0.470363
Total training time: 93.25 seconds.
-- Epoch 211
Norm: 279.88, NNZs: 589993, Bias: -0.077206, T: 100621047, Avg. loss:
0.470341
Total training time: 93.68 seconds.
-- Epoch 212
Norm: 279.87, NNZs: 589993, Bias: -0.074995, T: 101097924, Avg. loss:
0.470320
Total training time: 94.13 seconds.
-- Epoch 213
Norm: 279.87, NNZs: 589993, Bias: -0.071499, T: 101574801, Avg. loss:
0.470299
Total training time: 94.56 seconds.
-- Epoch 214
Norm: 279.87, NNZs: 589993, Bias: -0.070948, T: 102051678, Avg. loss:
0.470277
Total training time: 95.00 seconds.
-- Epoch 215
Norm: 279.87, NNZs: 589993, Bias: -0.072559, T: 102528555, Avg. loss:
0.470256
Total training time: 95.43 seconds.
-- Epoch 216
Norm: 279.87, NNZs: 589993, Bias: -0.076697, T: 103005432, Avg. loss:
0.470236
Total training time: 95.87 seconds.
-- Epoch 217
Norm: 279.87, NNZs: 589993, Bias: -0.075088, T: 103482309, Avg. loss:
0.470215
Total training time: 96.34 seconds.
-- Epoch 218
Norm: 279.86, NNZs: 589993, Bias: -0.070405, T: 103959186, Avg. loss:
0.470195
Total training time: 96.81 seconds.
-- Epoch 219
Norm: 279.86, NNZs: 589993, Bias: -0.074466, T: 104436063, Avg. loss:
0.470174
Total training time: 97.26 seconds.
-- Epoch 220
Norm: 279.86, NNZs: 589993, Bias: -0.070212, T: 104912940, Avg. loss:
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0.470154
Total training time: 97.71 seconds.
-- Epoch 221
Norm: 279.86, NNZs: 589993, Bias: -0.069540, T: 105389817, Avg. loss:
0.470134
Total training time: 98.16 seconds.
-- Epoch 222
Norm: 279.86, NNZs: 589993, Bias: -0.067633, T: 105866694, Avg. loss:
0.470115
Total training time: 98.62 seconds.
-- Epoch 223
Norm: 279.85, NNZs: 589993, Bias: -0.073033, T: 106343571, Avg. loss:
0.470095
Total training time: 99.12 seconds.
-- Epoch 224
Norm: 279.85, NNZs: 589993, Bias: -0.074417, T: 106820448, Avg. loss:
0.470076
Total training time: 99.60 seconds.
-- Epoch 225
Norm: 279.85, NNZs: 589993, Bias: -0.078006, T: 107297325, Avg. loss:
0.470056
Total training time: 100.07 seconds.
-- Epoch 226
Norm: 279.85, NNZs: 589993, Bias: -0.074076, T: 107774202, Avg. loss:
0.470037
Total training time: 100.55 seconds.
-- Epoch 227
Norm: 279.85, NNZs: 589993, Bias: -0.072268, T: 108251079, Avg. loss:
0.470018
Total training time: 101.00 seconds.
-- Epoch 228
Norm: 279.85, NNZs: 589993, Bias: -0.076512, T: 108727956, Avg. loss:
0.470000
Total training time: 101.44 seconds.
-- Epoch 229
Norm: 279.85, NNZs: 589993, Bias: -0.075641, T: 109204833, Avg. loss:
0.469981
Total training time: 101.95 seconds.
-- Epoch 230
Norm: 279.85, NNZs: 589993, Bias: -0.073975, T: 109681710, Avg. loss:
0.469962
Total training time: 102.44 seconds.
-- Epoch 231
Norm: 279.84, NNZs: 589993, Bias: -0.079040, T: 110158587, Avg. loss:
0.469944
Total training time: 102.93 seconds.
-- Epoch 232
Norm: 279.84, NNZs: 589993, Bias: -0.073249, T: 110635464, Avg. loss:
0.469926
Total training time: 103.39 seconds.
-- Epoch 233
Norm: 279.84, NNZs: 589993, Bias: -0.072271, T: 111112341, Avg. loss:
0.469908
Total training time: 103.88 seconds.
-- Epoch 234
Norm: 279.84, NNZs: 589993, Bias: -0.075646, T: 111589218, Avg. loss:
0.469890
```

```
Total training time: 104.39 seconds.
-- Epoch 235
Norm: 279.84, NNZs: 589993, Bias: -0.080627, T: 112066095, Avg. loss:
0.469872
Total training time: 104.87 seconds.
-- Epoch 236
Norm: 279.84, NNZs: 589993, Bias: -0.079197, T: 112542972, Avg. loss:
0.469855
Total training time: 105.36 seconds.
-- Epoch 237
Norm: 279.83, NNZs: 589993, Bias: -0.075220, T: 113019849, Avg. loss:
0.469837
Total training time: 105.84 seconds.
-- Epoch 238
Norm: 279.83, NNZs: 589993, Bias: -0.069281, T: 113496726, Avg. loss:
0.469820
Total training time: 106.28 seconds.
-- Epoch 239
Norm: 279.83, NNZs: 589993, Bias: -0.071340, T: 113973603, Avg. loss:
0.469803
Total training time: 106.71 seconds.
-- Epoch 240
Norm: 279.83, NNZs: 589993, Bias: -0.073998, T: 114450480, Avg. loss:
0.469786
Total training time: 107.14 seconds.
-- Epoch 241
Norm: 279.83, NNZs: 589993, Bias: -0.079486, T: 114927357, Avg. loss:
0.469769
Total training time: 107.57 seconds.
-- Epoch 242
Norm: 279.83, NNZs: 589993, Bias: -0.075022, T: 115404234, Avg. loss:
0.469752
Total training time: 108.00 seconds.
-- Epoch 243
Norm: 279.83, NNZs: 589993, Bias: -0.075052, T: 115881111, Avg. loss:
0.469735
Total training time: 108.43 seconds.
-- Epoch 244
Norm: 279.82, NNZs: 589993, Bias: -0.071219, T: 116357988, Avg. loss:
0.469719
Total training time: 108.89 seconds.
-- Epoch 245
Norm: 279.82, NNZs: 589993, Bias: -0.073421, T: 116834865, Avg. loss:
0.469702
Total training time: 109.30 seconds.
-- Epoch 246
Norm: 279.82, NNZs: 589993, Bias: -0.072103, T: 117311742, Avg. loss:
0.469686
Total training time: 109.75 seconds.
-- Epoch 247
Norm: 279.82, NNZs: 589993, Bias: -0.075598, T: 117788619, Avg. loss:
0.469670
Total training time: 110.17 seconds.
-- Epoch 248
Norm: 279.82, NNZs: 589993, Bias: -0.074514, T: 118265496, Avg. loss:
0.469654
Total training time: 110.59 seconds.
```

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-- Epoch 249
Norm: 279.82, NNZs: 589993, Bias: -0.073608, T: 118742373, Avg. loss:
0.469638
Total training time: 111.01 seconds.
-- Epoch 250
Norm: 279.82, NNZs: 589993, Bias: -0.075605, T: 119219250, Avg. loss:
0.469622
Total training time: 111.42 seconds.
-- Epoch 1
Norm: 300.51, NNZs: 589993, Bias: -1.799745, T: 476877, Avg. loss: 0.56
6966
Total training time: 0.43 seconds.
-- Epoch 2
Norm: 266.03, NNZs: 589993, Bias: -1.689908, T: 953754, Avg. loss: 0.45
2354
Total training time: 0.87 seconds.
-- Epoch 3
Norm: 256.32, NNZs: 589993, Bias: -1.555931, T: 1430631, Avg. loss: 0.4
08142
Total training time: 1.31 seconds.
-- Epoch 4
Norm: 251.76, NNZs: 589993, Bias: -1.623316, T: 1907508, Avg. loss: 0.3
84300
Total training time: 1.74 seconds.
-- Epoch 5
Norm: 249.31, NNZs: 589993, Bias: -1.626820, T: 2384385, Avg. loss: 0.3
69224
Total training time: 2.17 seconds.
-- Epoch 6
Norm: 247.89, NNZs: 589993, Bias: -1.589651, T: 2861262, Avg. loss: 0.3
58750
Total training time: 2.60 seconds.
-- Epoch 7
Norm: 246.84, NNZs: 589993, Bias: -1.588471, T: 3338139, Avg. loss: 0.3
51028
Total training time: 3.10 seconds.
-- Epoch 8
Norm: 245.98, NNZs: 589993, Bias: -1.620221, T: 3815016, Avg. loss: 0.3
45062
Total training time: 3.51 seconds.
-- Epoch 9
Norm: 245.34, NNZs: 589993, Bias: -1.618840, T: 4291893, Avg. loss: 0.3
40319
Total training time: 3.95 seconds.
-- Epoch 10
Norm: 244.89, NNZs: 589993, Bias: -1.645245, T: 4768770, Avg. loss: 0.3
36455
Total training time: 4.38 seconds.
-- Epoch 11
Norm: 244.47, NNZs: 589993, Bias: -1.628901, T: 5245647, Avg. loss: 0.3
33230
Total training time: 4.86 seconds.
-- Epoch 12
Norm: 244.15, NNZs: 589993, Bias: -1.586601, T: 5722524, Avg. loss: 0.3
30495
Total training time: 5.32 seconds.
-- Epoch 13
```

```
Norm: 243.89, NNZs: 589993, Bias: -1.657207, T: 6199401, Avg. loss: 0.3
28151
Total training time: 5.74 seconds.
-- Epoch 14
Norm: 243.66, NNZs: 589993, Bias: -1.584857, T: 6676278, Avg. loss: 0.3
26114
Total training time: 6.17 seconds.
-- Epoch 15
Norm: 243.41, NNZs: 589993, Bias: -1.597705, T: 7153155, Avg. loss: 0.3
24326
Total training time: 6.66 seconds.
-- Epoch 16
Norm: 243.23, NNZs: 589993, Bias: -1.599201, T: 7630032, Avg. loss: 0.3
22743
Total training time: 7.12 seconds.
-- Epoch 17
Norm: 243.05, NNZs: 589993, Bias: -1.588090, T: 8106909, Avg. loss: 0.3
21330
Total training time: 7.55 seconds.
-- Epoch 18
Norm: 242.93, NNZs: 589993, Bias: -1.573307, T: 8583786, Avg. loss: 0.3
20064
Total training time: 8.02 seconds.
-- Epoch 19
Norm: 242.78, NNZs: 589993, Bias: -1.590735, T: 9060663, Avg. loss: 0.3
18921
Total training time: 8.47 seconds.
-- Epoch 20
Norm: 242.67, NNZs: 589993, Bias: -1.597597, T: 9537540, Avg. loss: 0.3
17883
Total training time: 8.93 seconds.
-- Epoch 21
Norm: 242.55, NNZs: 589993, Bias: -1.639080, T: 10014417, Avg. loss: 0.
316936
Total training time: 9.40 seconds.
-- Epoch 22
Norm: 242.45, NNZs: 589993, Bias: -1.591883, T: 10491294, Avg. loss: 0.
316067
Total training time: 9.87 seconds.
-- Epoch 23
Norm: 242.36, NNZs: 589993, Bias: -1.588191, T: 10968171, Avg. loss: 0.
315269
Total training time: 10.32 seconds.
-- Epoch 24
Norm: 242.30, NNZs: 589993, Bias: -1.609438, T: 11445048, Avg. loss: 0.
314533
Total training time: 10.79 seconds.
-- Epoch 25
Norm: 242.20, NNZs: 589993, Bias: -1.608332, T: 11921925, Avg. loss: 0.
313848
Total training time: 11.26 seconds.
-- Epoch 26
Norm: 242.11, NNZs: 589993, Bias: -1.608127, T: 12398802, Avg. loss: 0.
313213
Total training time: 11.68 seconds.
-- Epoch 27
Norm: 242.07, NNZs: 589993, Bias: -1.600459, T: 12875679, Avg. loss: 0.
```

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312621
Total training time: 12.10 seconds.
-- Epoch 28
Norm: 241.99, NNZs: 589993, Bias: -1.608467, T: 13352556, Avg. loss: 0.
312069
Total training time: 12.57 seconds.
-- Epoch 29
Norm: 241.93, NNZs: 589993, Bias: -1.621338, T: 13829433, Avg. loss: 0.
311553
Total training time: 12.99 seconds.
-- Epoch 30
Norm: 241.91, NNZs: 589993, Bias: -1.608216, T: 14306310, Avg. loss: 0.
311067
Total training time: 13.44 seconds.
-- Epoch 31
Norm: 241.84, NNZs: 589993, Bias: -1.609813, T: 14783187, Avg. loss: 0.
310611
Total training time: 13.86 seconds.
-- Epoch 32
Norm: 241.78, NNZs: 589993, Bias: -1.598592, T: 15260064, Avg. loss: 0.
310181
Total training time: 14.27 seconds.
-- Epoch 33
Norm: 241.74, NNZs: 589993, Bias: -1.614280, T: 15736941, Avg. loss: 0.
309776
Total training time: 14.69 seconds.
-- Epoch 34
Norm: 241.70, NNZs: 589993, Bias: -1.599098, T: 16213818, Avg. loss: 0.
309391
Total training time: 15.13 seconds.
-- Epoch 35
Norm: 241.64, NNZs: 589993, Bias: -1.604171, T: 16690695, Avg. loss: 0.
309027
Total training time: 15.62 seconds.
-- Epoch 36
Norm: 241.60, NNZs: 589993, Bias: -1.598276, T: 17167572, Avg. loss: 0.
308681
Total training time: 16.08 seconds.
-- Epoch 37
Norm: 241.57, NNZs: 589993, Bias: -1.608842, T: 17644449, Avg. loss: 0.
308354
Total training time: 16.50 seconds.
-- Epoch 38
Norm: 241.53, NNZs: 589993, Bias: -1.614420, T: 18121326, Avg. loss: 0.
308042
Total training time: 16.96 seconds.
-- Epoch 39
Norm: 241.51, NNZs: 589993, Bias: -1.598588, T: 18598203, Avg. loss: 0.
307745
Total training time: 17.39 seconds.
-- Epoch 40
Norm: 241.47, NNZs: 589993, Bias: -1.610640, T: 19075080, Avg. loss: 0.
307461
Total training time: 17.82 seconds.
-- Epoch 41
Norm: 241.44, NNZs: 589993, Bias: -1.590145, T: 19551957, Avg. loss: 0.
307190
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Total training time: 18.23 seconds.
-- Epoch 42
Norm: 241.42, NNZs: 589993, Bias: -1.620475, T: 20028834, Avg. loss: 0.
306931
Total training time: 18.68 seconds.
-- Epoch 43
Norm: 241.38, NNZs: 589993, Bias: -1.606789, T: 20505711, Avg. loss: 0.
306683
Total training time: 19.10 seconds.
-- Epoch 44
Norm: 241.36, NNZs: 589993, Bias: -1.608439, T: 20982588, Avg. loss: 0.
306446
Total training time: 19.55 seconds.
-- Epoch 45
Norm: 241.34, NNZs: 589993, Bias: -1.604055, T: 21459465, Avg. loss: 0.
306219
Total training time: 20.04 seconds.
-- Epoch 46
Norm: 241.32, NNZs: 589993, Bias: -1.614123, T: 21936342, Avg. loss: 0.
306001
Total training time: 20.48 seconds.
-- Epoch 47
Norm: 241.29, NNZs: 589993, Bias: -1.601591, T: 22413219, Avg. loss: 0.
305791
Total training time: 20.91 seconds.
-- Epoch 48
Norm: 241.26, NNZs: 589993, Bias: -1.614955, T: 22890096, Avg. loss: 0.
305589
Total training time: 21.32 seconds.
-- Epoch 49
Norm: 241.23, NNZs: 589993, Bias: -1.620744, T: 23366973, Avg. loss: 0.
305395
Total training time: 21.79 seconds.
-- Epoch 50
Norm: 241.22, NNZs: 589993, Bias: -1.618399, T: 23843850, Avg. loss: 0.
305208
Total training time: 22.25 seconds.
-- Epoch 51
Norm: 241.20, NNZs: 589993, Bias: -1.593723, T: 24320727, Avg. loss: 0.
305028
Total training time: 22.74 seconds.
-- Epoch 52
Norm: 241.19, NNZs: 589993, Bias: -1.605327, T: 24797604, Avg. loss: 0.
304855
Total training time: 23.16 seconds.
-- Epoch 53
Norm: 241.16, NNZs: 589993, Bias: -1.606882, T: 25274481, Avg. loss: 0.
304687
Total training time: 23.66 seconds.
-- Epoch 54
Norm: 241.15, NNZs: 589993, Bias: -1.601873, T: 25751358, Avg. loss: 0.
304525
Total training time: 24.10 seconds.
-- Epoch 55
Norm: 241.13, NNZs: 589993, Bias: -1.631578, T: 26228235, Avg. loss: 0.
304368
Total training time: 24.53 seconds.
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-- Epoch 56
Norm: 241.12, NNZs: 589993, Bias: -1.616851, T: 26705112, Avg. loss: 0.
304218
Total training time: 24.96 seconds.
-- Epoch 57
Norm: 241.10, NNZs: 589993, Bias: -1.597600, T: 27181989, Avg. loss: 0.
304071
Total training time: 25.42 seconds.
-- Epoch 58
Norm: 241.08, NNZs: 589993, Bias: -1.615839, T: 27658866, Avg. loss: 0.
303930
Total training time: 25.85 seconds.
-- Epoch 59
Norm: 241.07, NNZs: 589993, Bias: -1.602812, T: 28135743, Avg. loss: 0.
303792
Total training time: 26.30 seconds.
-- Epoch 60
Norm: 241.05, NNZs: 589993, Bias: -1.603121, T: 28612620, Avg. loss: 0.
303660
Total training time: 26.73 seconds.
-- Epoch 61
Norm: 241.03, NNZs: 589993, Bias: -1.605807, T: 29089497, Avg. loss: 0.
303531
Total training time: 27.15 seconds.
-- Epoch 62
Norm: 241.03, NNZs: 589993, Bias: -1.599129, T: 29566374, Avg. loss: 0.
303406
Total training time: 27.64 seconds.
-- Epoch 63
Norm: 241.00, NNZs: 589993, Bias: -1.614017, T: 30043251, Avg. loss: 0.
303285
Total training time: 28.13 seconds.
-- Epoch 64
Norm: 241.00, NNZs: 589993, Bias: -1.605587, T: 30520128, Avg. loss: 0.
303167
Total training time: 28.60 seconds.
-- Epoch 65
Norm: 240.98, NNZs: 589993, Bias: -1.608814, T: 30997005, Avg. loss: 0.
303053
Total training time: 29.10 seconds.
-- Epoch 66
Norm: 240.97, NNZs: 589993, Bias: -1.606074, T: 31473882, Avg. loss: 0.
302942
Total training time: 29.56 seconds.
-- Epoch 67
Norm: 240.95, NNZs: 589993, Bias: -1.608275, T: 31950759, Avg. loss: 0.
302834
Total training time: 30.01 seconds.
-- Epoch 68
Norm: 240.95, NNZs: 589993, Bias: -1.615966, T: 32427636, Avg. loss: 0.
302729
Total training time: 30.47 seconds.
-- Epoch 69
Norm: 240.93, NNZs: 589993, Bias: -1.612359, T: 32904513, Avg. loss: 0.
302627
Total training time: 30.94 seconds.
-- Epoch 70
```

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Norm: 240.92, NNZs: 589993, Bias: -1.609463, T: 33381390, Avg. loss: 0.
302527
Total training time: 31.36 seconds.
-- Epoch 71
Norm: 240.91, NNZs: 589993, Bias: -1.620954, T: 33858267, Avg. loss: 0.
302430
Total training time: 31.81 seconds.
-- Epoch 72
Norm: 240.90, NNZs: 589993, Bias: -1.608811, T: 34335144, Avg. loss: 0.
302335
Total training time: 32.22 seconds.
-- Epoch 73
Norm: 240.89, NNZs: 589993, Bias: -1.604417, T: 34812021, Avg. loss: 0.
302243
Total training time: 32.64 seconds.
-- Epoch 74
Norm: 240.88, NNZs: 589993, Bias: -1.599039, T: 35288898, Avg. loss: 0.
302153
Total training time: 33.06 seconds.
-- Epoch 75
Norm: 240.87, NNZs: 589993, Bias: -1.609048, T: 35765775, Avg. loss: 0.
302066
Total training time: 33.50 seconds.
-- Epoch 76
Norm: 240.86, NNZs: 589993, Bias: -1.618053, T: 36242652, Avg. loss: 0.
301981
Total training time: 33.95 seconds.
-- Epoch 77
Norm: 240.86, NNZs: 589993, Bias: -1.602498, T: 36719529, Avg. loss: 0.
301897
Total training time: 34.42 seconds.
-- Epoch 78
Norm: 240.85, NNZs: 589993, Bias: -1.606949, T: 37196406, Avg. loss: 0.
301816
Total training time: 34.87 seconds.
-- Epoch 79
Norm: 240.83, NNZs: 589993, Bias: -1.604277, T: 37673283, Avg. loss: 0.
301737
Total training time: 35.32 seconds.
-- Epoch 80
Norm: 240.82, NNZs: 589993, Bias: -1.609744, T: 38150160, Avg. loss: 0.
301659
Total training time: 35.80 seconds.
-- Epoch 81
Norm: 240.81, NNZs: 589993, Bias: -1.614920, T: 38627037, Avg. loss: 0.
301583
Total training time: 36.31 seconds.
-- Epoch 82
Norm: 240.81, NNZs: 589993, Bias: -1.606326, T: 39103914, Avg. loss: 0.
301509
Total training time: 36.80 seconds.
-- Epoch 83
Norm: 240.80, NNZs: 589993, Bias: -1.613905, T: 39580791, Avg. loss: 0.
301437
Total training time: 37.28 seconds.
-- Epoch 84
Norm: 240.79, NNZs: 589993, Bias: -1.611967, T: 40057668, Avg. loss: 0.
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301366
Total training time: 37.73 seconds.
-- Epoch 85
Norm: 240.79, NNZs: 589993, Bias: -1.608794, T: 40534545, Avg. loss: 0.
301297
Total training time: 38.17 seconds.
-- Epoch 86
Norm: 240.78, NNZs: 589993, Bias: -1.609823, T: 41011422, Avg. loss: 0.
301229
Total training time: 38.66 seconds.
-- Epoch 87
Norm: 240.77, NNZs: 589993, Bias: -1.597127, T: 41488299, Avg. loss: 0.
301162
Total training time: 39.15 seconds.
-- Epoch 88
Norm: 240.76, NNZs: 589993, Bias: -1.611133, T: 41965176, Avg. loss: 0.
301097
Total training time: 39.58 seconds.
-- Epoch 89
Norm: 240.76, NNZs: 589993, Bias: -1.599464, T: 42442053, Avg. loss: 0.
301034
Total training time: 40.07 seconds.
-- Epoch 90
Norm: 240.75, NNZs: 589993, Bias: -1.604908, T: 42918930, Avg. loss: 0.
300972
Total training time: 40.51 seconds.
-- Epoch 91
Norm: 240.74, NNZs: 589993, Bias: -1.613156, T: 43395807, Avg. loss: 0.
300911
Total training time: 40.94 seconds.
-- Epoch 92
Norm: 240.74, NNZs: 589993, Bias: -1.606558, T: 43872684, Avg. loss: 0.
300851
Total training time: 41.37 seconds.
-- Epoch 93
Norm: 240.73, NNZs: 589993, Bias: -1.605190, T: 44349561, Avg. loss: 0.
300792
Total training time: 41.79 seconds.
-- Epoch 94
Norm: 240.72, NNZs: 589993, Bias: -1.599974, T: 44826438, Avg. loss: 0.
300735
Total training time: 42.23 seconds.
-- Epoch 95
Norm: 240.71, NNZs: 589993, Bias: -1.613034, T: 45303315, Avg. loss: 0.
300679
Total training time: 42.67 seconds.
-- Epoch 96
Norm: 240.71, NNZs: 589993, Bias: -1.599876, T: 45780192, Avg. loss: 0.
300623
Total training time: 43.12 seconds.
-- Epoch 97
Norm: 240.70, NNZs: 589993, Bias: -1.604319, T: 46257069, Avg. loss: 0.
300569
Total training time: 43.57 seconds.
-- Epoch 98
Norm: 240.70, NNZs: 589993, Bias: -1.616097, T: 46733946, Avg. loss: 0.
300516
```

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Total training time: 43.99 seconds.
-- Epoch 99
Norm: 240.69, NNZs: 589993, Bias: -1.610485, T: 47210823, Avg. loss: 0.
300464
Total training time: 44.45 seconds.
-- Epoch 100
Norm: 240.69, NNZs: 589993, Bias: -1.608227, T: 47687700, Avg. loss: 0.
300413
Total training time: 44.88 seconds.
-- Epoch 101
Norm: 240.68, NNZs: 589993, Bias: -1.599619, T: 48164577, Avg. loss: 0.
300363
Total training time: 45.33 seconds.
-- Epoch 102
Norm: 240.68, NNZs: 589993, Bias: -1.604874, T: 48641454, Avg. loss: 0.
300314
Total training time: 45.77 seconds.
-- Epoch 103
Norm: 240.67, NNZs: 589993, Bias: -1.618831, T: 49118331, Avg. loss: 0.
300265
Total training time: 46.21 seconds.
-- Epoch 104
Norm: 240.67, NNZs: 589993, Bias: -1.605180, T: 49595208, Avg. loss: 0.
300218
Total training time: 46.65 seconds.
-- Epoch 105
Norm: 240.66, NNZs: 589993, Bias: -1.608302, T: 50072085, Avg. loss: 0.
300171
Total training time: 47.09 seconds.
-- Epoch 106
Norm: 240.65, NNZs: 589993, Bias: -1.611469, T: 50548962, Avg. loss: 0.
300125
Total training time: 47.51 seconds.
-- Epoch 107
Norm: 240.65, NNZs: 589993, Bias: -1.605568, T: 51025839, Avg. loss: 0.
300080
Total training time: 47.95 seconds.
-- Epoch 108
Norm: 240.64, NNZs: 589993, Bias: -1.616540, T: 51502716, Avg. loss: 0.
300036
Total training time: 48.39 seconds.
-- Epoch 109
Norm: 240.64, NNZs: 589993, Bias: -1.611094, T: 51979593, Avg. loss: 0.
299992
Total training time: 48.83 seconds.
-- Epoch 110
Norm: 240.64, NNZs: 589993, Bias: -1.611164, T: 52456470, Avg. loss: 0.
299949
Total training time: 49.28 seconds.
-- Epoch 111
Norm: 240.63, NNZs: 589993, Bias: -1.606014, T: 52933347, Avg. loss: 0.
299907
Total training time: 49.72 seconds.
-- Epoch 112
Norm: 240.62, NNZs: 589993, Bias: -1.609061, T: 53410224, Avg. loss: 0.
299866
Total training time: 50.19 seconds.
```

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-- Epoch 113
Norm: 240.62, NNZs: 589993, Bias: -1.611006, T: 53887101, Avg. loss: 0.
299825
Total training time: 50.65 seconds.
-- Epoch 114
Norm: 240.62, NNZs: 589993, Bias: -1.613553, T: 54363978, Avg. loss: 0.
299785
Total training time: 51.09 seconds.
-- Epoch 115
Norm: 240.61, NNZs: 589993, Bias: -1.622282, T: 54840855, Avg. loss: 0.
299745
Total training time: 51.51 seconds.
-- Epoch 116
Norm: 240.61, NNZs: 589993, Bias: -1.619860, T: 55317732, Avg. loss: 0.
299707
Total training time: 51.94 seconds.
-- Epoch 117
Norm: 240.61, NNZs: 589993, Bias: -1.610273, T: 55794609, Avg. loss: 0.
299669
Total training time: 52.37 seconds.
-- Epoch 118
Norm: 240.61, NNZs: 589993, Bias: -1.603053, T: 56271486, Avg. loss: 0.
299631
Total training time: 52.82 seconds.
-- Epoch 119
Norm: 240.60, NNZs: 589993, Bias: -1.611354, T: 56748363, Avg. loss: 0.
299594
Total training time: 53.26 seconds.
-- Epoch 120
Norm: 240.59, NNZs: 589993, Bias: -1.610957, T: 57225240, Avg. loss: 0.
299558
Total training time: 53.69 seconds.
-- Epoch 121
Norm: 240.59, NNZs: 589993, Bias: -1.604984, T: 57702117, Avg. loss: 0.
299522
Total training time: 54.12 seconds.
-- Epoch 122
Norm: 240.58, NNZs: 589993, Bias: -1.609340, T: 58178994, Avg. loss: 0.
299487
Total training time: 54.56 seconds.
-- Epoch 123
Norm: 240.58, NNZs: 589993, Bias: -1.613482, T: 58655871, Avg. loss: 0.
299452
Total training time: 55.00 seconds.
-- Epoch 124
Norm: 240.57, NNZs: 589993, Bias: -1.611370, T: 59132748, Avg. loss: 0.
299418
Total training time: 55.45 seconds.
-- Epoch 125
Norm: 240.57, NNZs: 589993, Bias: -1.610184, T: 59609625, Avg. loss: 0.
299384
Total training time: 55.90 seconds.
-- Epoch 126
Norm: 240.57, NNZs: 589993, Bias: -1.613261, T: 60086502, Avg. loss: 0.
299351
Total training time: 56.34 seconds.
-- Epoch 127
```

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Norm: 240.57, NNZs: 589993, Bias: -1.602604, T: 60563379, Avg. loss: 0.
299318
Total training time: 56.78 seconds.
-- Epoch 128
Norm: 240.56, NNZs: 589993, Bias: -1.598361, T: 61040256, Avg. loss: 0.
299286
Total training time: 57.22 seconds.
-- Epoch 129
Norm: 240.56, NNZs: 589993, Bias: -1.608962, T: 61517133, Avg. loss: 0.
299254
Total training time: 57.68 seconds.
-- Epoch 130
Norm: 240.55, NNZs: 589993, Bias: -1.612153, T: 61994010, Avg. loss: 0.
299223
Total training time: 58.15 seconds.
-- Epoch 131
Norm: 240.55, NNZs: 589993, Bias: -1.600371, T: 62470887, Avg. loss: 0.
299192
Total training time: 58.62 seconds.
-- Epoch 132
Norm: 240.55, NNZs: 589993, Bias: -1.608114, T: 62947764, Avg. loss: 0.
299161
Total training time: 59.11 seconds.
-- Epoch 133
Norm: 240.54, NNZs: 589993, Bias: -1.610215, T: 63424641, Avg. loss: 0.
299132
Total training time: 59.58 seconds.
-- Epoch 134
Norm: 240.54, NNZs: 589993, Bias: -1.618028, T: 63901518, Avg. loss: 0.
299102
Total training time: 60.02 seconds.
-- Epoch 135
Norm: 240.54, NNZs: 589993, Bias: -1.610931, T: 64378395, Avg. loss: 0.
299073
Total training time: 60.48 seconds.
-- Epoch 136
Norm: 240.53, NNZs: 589993, Bias: -1.608880, T: 64855272, Avg. loss: 0.
299044
Total training time: 60.93 seconds.
-- Epoch 137
Norm: 240.53, NNZs: 589993, Bias: -1.607296, T: 65332149, Avg. loss: 0.
299016
Total training time: 61.41 seconds.
-- Epoch 138
Norm: 240.53, NNZs: 589993, Bias: -1.609687, T: 65809026, Avg. loss: 0.
298988
Total training time: 61.86 seconds.
-- Epoch 139
Norm: 240.52, NNZs: 589993, Bias: -1.611000, T: 66285903, Avg. loss: 0.
298960
Total training time: 62.30 seconds.
-- Epoch 140
Norm: 240.52, NNZs: 589993, Bias: -1.605732, T: 66762780, Avg. loss: 0.
298933
Total training time: 62.76 seconds.
-- Epoch 141
Norm: 240.52, NNZs: 589993, Bias: -1.614321, T: 67239657, Avg. loss: 0.
```

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298906
Total training time: 63.21 seconds.
-- Epoch 142
Norm: 240.51, NNZs: 589993, Bias: -1.607199, T: 67716534, Avg. loss: 0.
298879
Total training time: 63.67 seconds.
-- Epoch 143
Norm: 240.51, NNZs: 589993, Bias: -1.610981, T: 68193411, Avg. loss: 0.
298853
Total training time: 64.13 seconds.
-- Epoch 144
Norm: 240.51, NNZs: 589993, Bias: -1.609168, T: 68670288, Avg. loss: 0.
298827
Total training time: 64.59 seconds.
-- Epoch 145
Norm: 240.51, NNZs: 589993, Bias: -1.605874, T: 69147165, Avg. loss: 0.
298802
Total training time: 65.04 seconds.
-- Epoch 146
Norm: 240.50, NNZs: 589993, Bias: -1.612283, T: 69624042, Avg. loss: 0.
298777
Total training time: 65.47 seconds.
-- Epoch 147
Norm: 240.50, NNZs: 589993, Bias: -1.606274, T: 70100919, Avg. loss: 0.
298752
Total training time: 65.96 seconds.
-- Epoch 148
Norm: 240.50, NNZs: 589993, Bias: -1.606812, T: 70577796, Avg. loss: 0.
298727
Total training time: 66.46 seconds.
-- Epoch 149
Norm: 240.50, NNZs: 589993, Bias: -1.609437, T: 71054673, Avg. loss: 0.
298703
Total training time: 66.94 seconds.
-- Epoch 150
Norm: 240.49, NNZs: 589993, Bias: -1.611760, T: 71531550, Avg. loss: 0.
298679
Total training time: 67.43 seconds.
-- Epoch 151
Norm: 240.49, NNZs: 589993, Bias: -1.604129, T: 72008427, Avg. loss: 0.
298655
Total training time: 67.90 seconds.
-- Epoch 152
Norm: 240.49, NNZs: 589993, Bias: -1.611964, T: 72485304, Avg. loss: 0.
298632
Total training time: 68.38 seconds.
-- Epoch 153
Norm: 240.49, NNZs: 589993, Bias: -1.611335, T: 72962181, Avg. loss: 0.
298609
Total training time: 68.85 seconds.
-- Epoch 154
Norm: 240.48, NNZs: 589993, Bias: -1.615293, T: 73439058, Avg. loss: 0.
298586
Total training time: 69.33 seconds.
-- Epoch 155
Norm: 240.48, NNZs: 589993, Bias: -1.606457, T: 73915935, Avg. loss: 0.
298564
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Total training time: 69.82 seconds.
-- Epoch 156
Norm: 240.48, NNZs: 589993, Bias: -1.609901, T: 74392812, Avg. loss: 0.
298541
Total training time: 70.30 seconds.
-- Epoch 157
Norm: 240.47, NNZs: 589993, Bias: -1.608749, T: 74869689, Avg. loss: 0.
298519
Total training time: 70.78 seconds.
-- Epoch 158
Norm: 240.47, NNZs: 589993, Bias: -1.608171, T: 75346566, Avg. loss: 0.
298498
Total training time: 71.27 seconds.
-- Epoch 159
Norm: 240.47, NNZs: 589993, Bias: -1.608113, T: 75823443, Avg. loss: 0.
298476
Total training time: 71.73 seconds.
-- Epoch 160
Norm: 240.47, NNZs: 589993, Bias: -1.611706, T: 76300320, Avg. loss: 0.
298455
Total training time: 72.19 seconds.
-- Epoch 161
Norm: 240.47, NNZs: 589993, Bias: -1.607536, T: 76777197, Avg. loss: 0.
298434
Total training time: 72.63 seconds.
-- Epoch 162
Norm: 240.46, NNZs: 589993, Bias: -1.608829, T: 77254074, Avg. loss: 0.
298413
Total training time: 73.07 seconds.
-- Epoch 163
Norm: 240.46, NNZs: 589993, Bias: -1.615372, T: 77730951, Avg. loss: 0.
298393
Total training time: 73.51 seconds.
-- Epoch 164
Norm: 240.46, NNZs: 589993, Bias: -1.612293, T: 78207828, Avg. loss: 0.
298373
Total training time: 73.98 seconds.
-- Epoch 165
Norm: 240.46, NNZs: 589993, Bias: -1.610466, T: 78684705, Avg. loss: 0.
298353
Total training time: 74.41 seconds.
-- Epoch 166
Norm: 240.45, NNZs: 589993, Bias: -1.607204, T: 79161582, Avg. loss: 0.
298333
Total training time: 74.88 seconds.
-- Epoch 167
Norm: 240.45, NNZs: 589993, Bias: -1.610386, T: 79638459, Avg. loss: 0.
298313
Total training time: 75.36 seconds.
-- Epoch 168
Norm: 240.45, NNZs: 589993, Bias: -1.612284, T: 80115336, Avg. loss: 0.
298294
Total training time: 75.86 seconds.
-- Epoch 169
Norm: 240.45, NNZs: 589993, Bias: -1.608982, T: 80592213, Avg. loss: 0.
298275
Total training time: 76.31 seconds.
```

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-- Epoch 170
Norm: 240.45, NNZs: 589993, Bias: -1.611473, T: 81069090, Avg. loss: 0.
298256
Total training time: 76.77 seconds.
-- Epoch 171
Norm: 240.44, NNZs: 589993, Bias: -1.609051, T: 81545967, Avg. loss: 0.
298237
Total training time: 77.23 seconds.
-- Epoch 172
Norm: 240.44, NNZs: 589993, Bias: -1.610829, T: 82022844, Avg. loss: 0.
298218
Total training time: 77.67 seconds.
-- Epoch 173
Norm: 240.44, NNZs: 589993, Bias: -1.608101, T: 82499721, Avg. loss: 0.
298200
Total training time: 78.16 seconds.
-- Epoch 174
Norm: 240.44, NNZs: 589993, Bias: -1.610500, T: 82976598, Avg. loss: 0.
298182
Total training time: 78.66 seconds.
-- Epoch 175
Norm: 240.43, NNZs: 589993, Bias: -1.610343, T: 83453475, Avg. loss: 0.
298164
Total training time: 79.13 seconds.
-- Epoch 176
Norm: 240.44, NNZs: 589993, Bias: -1.607348, T: 83930352, Avg. loss: 0.
298146
Total training time: 79.60 seconds.
-- Epoch 177
Norm: 240.43, NNZs: 589993, Bias: -1.608369, T: 84407229, Avg. loss: 0.
298129
Total training time: 80.10 seconds.
-- Epoch 178
Norm: 240.43, NNZs: 589993, Bias: -1.605681, T: 84884106, Avg. loss: 0.
298111
Total training time: 80.58 seconds.
-- Epoch 179
Norm: 240.43, NNZs: 589993, Bias: -1.606302, T: 85360983, Avg. loss: 0.
298094
Total training time: 81.09 seconds.
-- Epoch 180
Norm: 240.42, NNZs: 589993, Bias: -1.611669, T: 85837860, Avg. loss: 0.
298077
Total training time: 81.56 seconds.
-- Epoch 181
Norm: 240.42, NNZs: 589993, Bias: -1.607140, T: 86314737, Avg. loss: 0.
298060
Total training time: 82.02 seconds.
-- Epoch 182
Norm: 240.42, NNZs: 589993, Bias: -1.610965, T: 86791614, Avg. loss: 0.
298044
Total training time: 82.47 seconds.
-- Epoch 183
Norm: 240.42, NNZs: 589993, Bias: -1.612324, T: 87268491, Avg. loss: 0.
298027
Total training time: 82.92 seconds.
-- Epoch 184
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Norm: 240.42, NNZs: 589993, Bias: -1.610424, T: 87745368, Avg. loss: 0.
298011
Total training time: 83.36 seconds.
-- Epoch 185
Norm: 240.42, NNZs: 589993, Bias: -1.612893, T: 88222245, Avg. loss: 0.
297995
Total training time: 83.80 seconds.
-- Epoch 186
Norm: 240.41, NNZs: 589993, Bias: -1.607222, T: 88699122, Avg. loss: 0.
297979
Total training time: 84.25 seconds.
-- Epoch 187
Norm: 240.41, NNZs: 589993, Bias: -1.609500, T: 89175999, Avg. loss: 0.
297963
Total training time: 84.69 seconds.
-- Epoch 188
Norm: 240.41, NNZs: 589993, Bias: -1.609286, T: 89652876, Avg. loss: 0.
297947
Total training time: 85.18 seconds.
-- Epoch 189
Norm: 240.41, NNZs: 589993, Bias: -1.604978, T: 90129753, Avg. loss: 0.
297932
Total training time: 85.64 seconds.
-- Epoch 190
Norm: 240.41, NNZs: 589993, Bias: -1.609618, T: 90606630, Avg. loss: 0.
297916
Total training time: 86.08 seconds.
-- Epoch 191
Norm: 240.41, NNZs: 589993, Bias: -1.609243, T: 91083507, Avg. loss: 0.
297901
Total training time: 86.55 seconds.
-- Epoch 192
Norm: 240.41, NNZs: 589993, Bias: -1.611360, T: 91560384, Avg. loss: 0.
297886
Total training time: 87.04 seconds.
-- Epoch 193
Norm: 240.40, NNZs: 589993, Bias: -1.607612, T: 92037261, Avg. loss: 0.
297871
Total training time: 87.51 seconds.
-- Epoch 194
Norm: 240.40, NNZs: 589993, Bias: -1.612725, T: 92514138, Avg. loss: 0.
297856
Total training time: 87.96 seconds.
-- Epoch 195
Norm: 240.40, NNZs: 589993, Bias: -1.613499, T: 92991015, Avg. loss: 0.
297841
Total training time: 88.42 seconds.
-- Epoch 196
Norm: 240.40, NNZs: 589993, Bias: -1.607327, T: 93467892, Avg. loss: 0.
297827
Total training time: 88.87 seconds.
-- Epoch 197
Norm: 240.40, NNZs: 589993, Bias: -1.606603, T: 93944769, Avg. loss: 0.
297813
Total training time: 89.32 seconds.
-- Epoch 198
Norm: 240.39, NNZs: 589993, Bias: -1.614949, T: 94421646, Avg. loss: 0.
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297798
Total training time: 89.78 seconds.
-- Epoch 199
Norm: 240.39, NNZs: 589993, Bias: -1.608636, T: 94898523, Avg. loss: 0.
297784
Total training time: 90.22 seconds.
-- Epoch 200
Norm: 240.39, NNZs: 589993, Bias: -1.608476, T: 95375400, Avg. loss: 0.
297770
Total training time: 90.68 seconds.
-- Epoch 201
Norm: 240.39, NNZs: 589993, Bias: -1.607813, T: 95852277, Avg. loss: 0.
297757
Total training time: 91.15 seconds.
-- Epoch 202
Norm: 240.39, NNZs: 589993, Bias: -1.607939, T: 96329154, Avg. loss: 0.
297743
Total training time: 91.59 seconds.
-- Epoch 203
Norm: 240.39, NNZs: 589993, Bias: -1.607637, T: 96806031, Avg. loss: 0.
297729
Total training time: 92.06 seconds.
-- Epoch 204
Norm: 240.39, NNZs: 589993, Bias: -1.606925, T: 97282908, Avg. loss: 0.
297716
Total training time: 92.50 seconds.
-- Epoch 205
Norm: 240.38, NNZs: 589993, Bias: -1.601505, T: 97759785, Avg. loss: 0.
297702
Total training time: 92.96 seconds.
-- Epoch 206
Norm: 240.38, NNZs: 589993, Bias: -1.605551, T: 98236662, Avg. loss: 0.
297689
Total training time: 93.42 seconds.
-- Epoch 207
Norm: 240.38, NNZs: 589993, Bias: -1.601747, T: 98713539, Avg. loss: 0.
297676
Total training time: 93.86 seconds.
-- Epoch 208
Norm: 240.38, NNZs: 589993, Bias: -1.606975, T: 99190416, Avg. loss: 0.
297663
Total training time: 94.31 seconds.
-- Epoch 209
Norm: 240.38, NNZs: 589993, Bias: -1.610497, T: 99667293, Avg. loss: 0.
297650
Total training time: 94.75 seconds.
-- Epoch 210
Norm: 240.38, NNZs: 589993, Bias: -1.609879, T: 100144170, Avg. loss:
0.297637
Total training time: 95.20 seconds.
-- Epoch 211
Norm: 240.37, NNZs: 589993, Bias: -1.606910, T: 100621047, Avg. loss:
0.297625
Total training time: 95.67 seconds.
-- Epoch 212
Norm: 240.37, NNZs: 589993, Bias: -1.607967, T: 101097924, Avg. loss:
0.297612
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Total training time: 96.12 seconds.
-- Epoch 213
Norm: 240.37, NNZs: 589993, Bias: -1.612730, T: 101574801, Avg. loss:
0.297600
Total training time: 96.58 seconds.
-- Epoch 214
Norm: 240.37, NNZs: 589993, Bias: -1.605794, T: 102051678, Avg. loss:
0.297588
Total training time: 97.02 seconds.
-- Epoch 215
Norm: 240.37, NNZs: 589993, Bias: -1.612395, T: 102528555, Avg. loss:
0.297575
Total training time: 97.46 seconds.
-- Epoch 216
Norm: 240.37, NNZs: 589993, Bias: -1.611392, T: 103005432, Avg. loss:
0.297563
Total training time: 97.90 seconds.
-- Epoch 217
Norm: 240.37, NNZs: 589993, Bias: -1.609666, T: 103482309, Avg. loss:
0.297551
Total training time: 98.35 seconds.
-- Epoch 218
Norm: 240.37, NNZs: 589993, Bias: -1.608527, T: 103959186, Avg. loss:
0.297540
Total training time: 98.79 seconds.
-- Epoch 219
Norm: 240.36, NNZs: 589993, Bias: -1.613370, T: 104436063, Avg. loss:
0.297528
Total training time: 99.24 seconds.
-- Epoch 220
Norm: 240.36, NNZs: 589993, Bias: -1.608641, T: 104912940, Avg. loss:
0.297516
Total training time: 99.70 seconds.
-- Epoch 221
Norm: 240.36, NNZs: 589993, Bias: -1.609575, T: 105389817, Avg. loss:
0.297505
Total training time: 100.15 seconds.
-- Epoch 222
Norm: 240.36, NNZs: 589993, Bias: -1.610177, T: 105866694, Avg. loss:
0.297493
Total training time: 100.61 seconds.
-- Epoch 223
Norm: 240.36, NNZs: 589993, Bias: -1.610304, T: 106343571, Avg. loss:
0.297482
Total training time: 101.05 seconds.
-- Epoch 224
Norm: 240.36, NNZs: 589993, Bias: -1.610558, T: 106820448, Avg. loss:
0.297470
Total training time: 101.49 seconds.
-- Epoch 225
Norm: 240.36, NNZs: 589993, Bias: -1.616474, T: 107297325, Avg. loss:
0.297459
Total training time: 101.93 seconds.
-- Epoch 226
Norm: 240.36, NNZs: 589993, Bias: -1.610745, T: 107774202, Avg. loss:
0.297448
Total training time: 102.37 seconds.
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-- Epoch 227
Norm: 240.35, NNZs: 589993, Bias: -1.616057, T: 108251079, Avg. loss:
0.297437
Total training time: 102.81 seconds.
-- Epoch 228
Norm: 240.35, NNZs: 589993, Bias: -1.608910, T: 108727956, Avg. loss:
0.297426
Total training time: 103.25 seconds.
-- Epoch 229
Norm: 240.35, NNZs: 589993, Bias: -1.609288, T: 109204833, Avg. loss:
0.297415
Total training time: 103.74 seconds.
-- Epoch 230
Norm: 240.35, NNZs: 589993, Bias: -1.610360, T: 109681710, Avg. loss:
0.297405
Total training time: 104.19 seconds.
-- Epoch 231
Norm: 240.35, NNZs: 589993, Bias: -1.610484, T: 110158587, Avg. loss:
0.297394
Total training time: 104.65 seconds.
-- Epoch 232
Norm: 240.35, NNZs: 589993, Bias: -1.604960, T: 110635464, Avg. loss:
0.297383
Total training time: 105.10 seconds.
-- Epoch 233
Norm: 240.35, NNZs: 589993, Bias: -1.607687, T: 111112341, Avg. loss:
0.297373
Total training time: 105.56 seconds.
-- Epoch 234
Norm: 240.35, NNZs: 589993, Bias: -1.609564, T: 111589218, Avg. loss:
0.297363
Total training time: 106.05 seconds.
-- Epoch 235
Norm: 240.35, NNZs: 589993, Bias: -1.607976, T: 112066095, Avg. loss:
0.297352
Total training time: 106.51 seconds.
-- Epoch 236
Norm: 240.35, NNZs: 589993, Bias: -1.609288, T: 112542972, Avg. loss:
0.297342
Total training time: 106.95 seconds.
-- Epoch 237
Norm: 240.34, NNZs: 589993, Bias: -1.607364, T: 113019849, Avg. loss:
0.297332
Total training time: 107.41 seconds.
-- Epoch 238
Norm: 240.34, NNZs: 589993, Bias: -1.610518, T: 113496726, Avg. loss:
0.297322
Total training time: 107.86 seconds.
-- Epoch 239
Norm: 240.34, NNZs: 589993, Bias: -1.607714, T: 113973603, Avg. loss:
0.297312
Total training time: 108.31 seconds.
-- Epoch 240
Norm: 240.34, NNZs: 589993, Bias: -1.608930, T: 114450480, Avg. loss:
0.297302
Total training time: 108.78 seconds.
-- Epoch 241
```

```
Norm: 240.34, NNZs: 589993, Bias: -1.611119, T: 114927357, Avg. loss:
0.297292
Total training time: 109.22 seconds.
-- Epoch 242
Norm: 240.34, NNZs: 589993, Bias: -1.609044, T: 115404234, Avg. loss:
0.297282
Total training time: 109.66 seconds.
-- Epoch 243
Norm: 240.34, NNZs: 589993, Bias: -1.608042, T: 115881111, Avg. loss:
0.297272
Total training time: 110.13 seconds.
-- Epoch 244
Norm: 240.34, NNZs: 589993, Bias: -1.608883, T: 116357988, Avg. loss:
0.297263
Total training time: 110.61 seconds.
-- Epoch 245
Norm: 240.33, NNZs: 589993, Bias: -1.611322, T: 116834865, Avg. loss:
0.297253
Total training time: 111.07 seconds.
-- Epoch 246
Norm: 240.33, NNZs: 589993, Bias: -1.611982, T: 117311742, Avg. loss:
0.297244
Total training time: 111.54 seconds.
-- Epoch 247
Norm: 240.33, NNZs: 589993, Bias: -1.613298, T: 117788619, Avg. loss:
0.297234
Total training time: 111.99 seconds.
-- Epoch 248
Norm: 240.33, NNZs: 589993, Bias: -1.611358, T: 118265496, Avg. loss:
0.297225
Total training time: 112.43 seconds.
-- Epoch 249
Norm: 240.33, NNZs: 589993, Bias: -1.609272, T: 118742373, Avg. loss:
0.297216
Total training time: 112.88 seconds.
-- Epoch 250
Norm: 240.33, NNZs: 589993, Bias: -1.609391, T: 119219250, Avg. loss:
0.297207
Total training time: 113.32 seconds.
done in 332.555000s
Percentage of non zeros coef: 100.000000
Predicting the outcomes of the testing set
done in 0.300000s
Classification report on test set for classifier:
SGDClassifier(alpha=1e-06, average=False, class_weight=None, epsilon=0.
1,
       eta0=0.0, fit_intercept=True, l1_ratio=0.15,
       learning_rate='optimal', loss='log', n_iter=250, n_jobs=1,
       penalty='l2', power_t=0.5, random_state=None, shuffle=True,
       verbose=True, warm_start=False)
()
          precision    recall  f1-score   support

       1       0.78      0.75      0.76     70805
       2       0.68      0.82      0.74     96773
       3       0.65      0.35      0.46     36798
```

```
avg / total        0.71       0.71       0.70       204376
```

```
Confusion matrix:
[[52750 16779  1276]
 [12163 78981  5629]
 [ 2838 20952 13008]]
```

```
[Parallel(n_jobs=1)]: Done   3 out of   3 | elapsed:  5.5min finished
```

In [18]:

```python
print x.shape
```

```
(681253, 724796)
```

In [ ]: