Dynamic Context Analysis in Twitter:

Brown Biggers

Issues with Regular Expressions

- Parsing errors created problems with word count
- Defaults caused incorrect tokenization

Examples:

```
re_hash_test = '# #34 4#3 A#36 3 A# #hashtag'
print(re.sub(r'\b#\B','!',re_hash_test))
print(re.sub(r'\b#\b','!',re_hash_test))
print(re.sub(r'\B#\B','!',re_hash_test))
```

```
# #34 4#3 A#36 3 A! #hashtag
# #34 4!3 A!36 3 A# #hashtag
! #34 4#3 A#36 3 A# #hashtag
```

```
text="this is a tweet # #### ####1 #hashtag #123 #12345 apm yooooo"
tokens_no_stopwords(text)
```

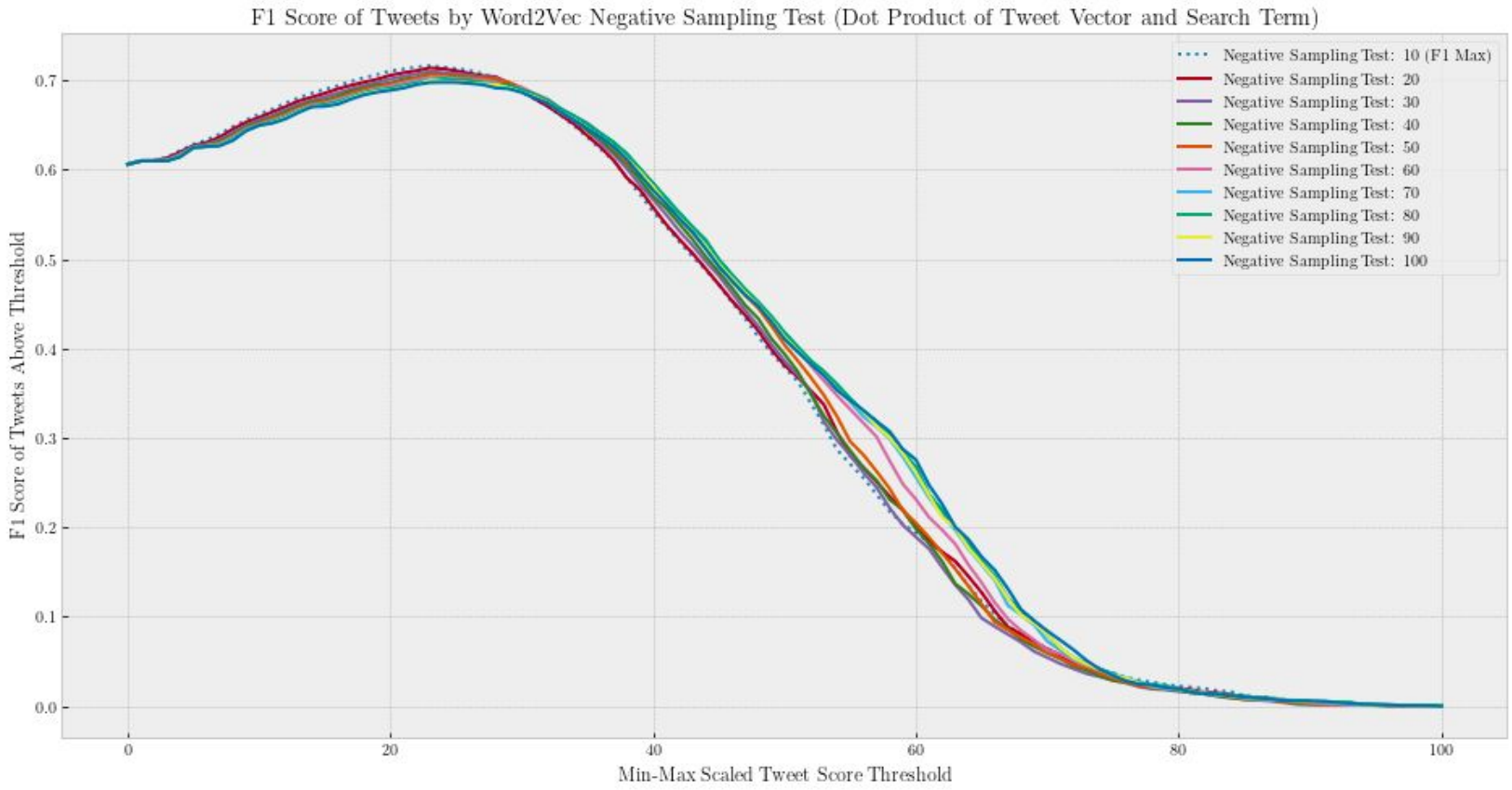
```
['tweet', '#1', '#hashtag', '#123', '#12345', 'yooo']
```

```
TAGGED 2017  #1 @ US 1-Biscayne Blvd. https://t.co/1foe57DVyC
['tagged', '2017', '#', '1', '@', 'us', '1-biscayne', 'blvd', '.', 'https', ':', '//t.co/1foe57dvyc']
['tagged', '2017', '#1', '@', 'us', '1-biscayne', 'blvd.', 'https://t.co/1foe57dvyc']
S: tagged 2017  #1 @ us 1-biscayne blvd. https://t.co/1foe57dvyc
1: tagged 2017  #1 @ us 1-biscayne blvd.
2: tagged 2017  #1 @ us 1-biscayne blvd.
3: tagged 2017  #1  us 1biscayne blvd
4: tagged 2017  #1  us 1biscayne blvd
5: tagged 2017  #1  us 1biscayne blvd
6: tagged 2017  #1   1biscayne blvd
7: tagged   #1   1biscayne blvd
['tagged', '#', '1', '1biscayne', 'blvd']
['tagged', '#1', '1biscayne', 'blvd']
```

Topics for next week:

- Neural network configuration
  - Negative Sampling v. Hierarchical Softmax
- Supporting documentation for Word2Vec in Twitter analysis

Negative Sampling Testing



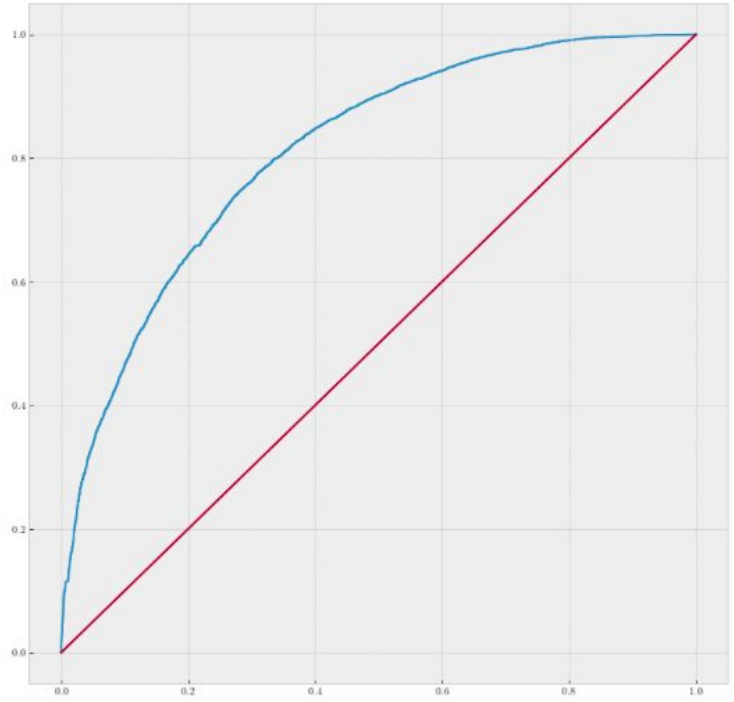
Negative Sampling Testing

	MM_Score	F1_Score_Max
0	0	0.000000
1	23	0.716133
2	23	0.713791
3	23	0.709994
4	23	0.707330
5	23	0.706207
6	24	0.703772
7	24	0.701751
8	24	0.701094
9	23	0.699942
10	24	0.697631

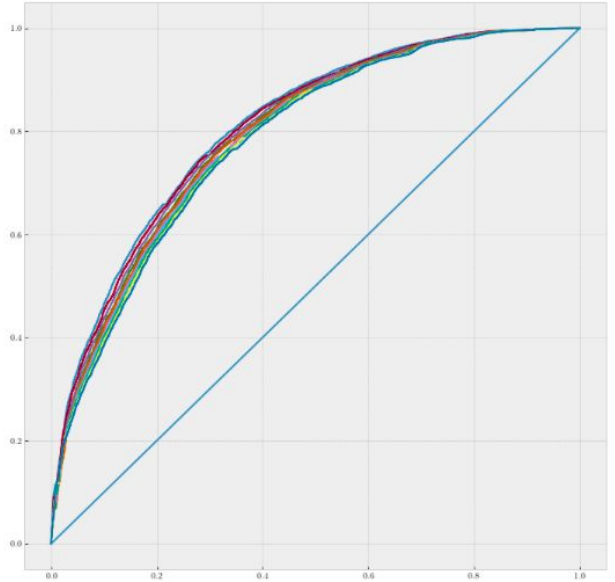
AU-ROC Curves

```
fpr, tpr, thresholds = roc_curve(tweet_encoded['irma_rel'],tweet_encoded['MM_score_window_1'])
```

```
fig_roc_1 = plt.figure(figsize=(12,12),facecolor='w')
plt.plot(fpr,tpr)
plt.plot([0,1],[0,1])
plt.show()
```



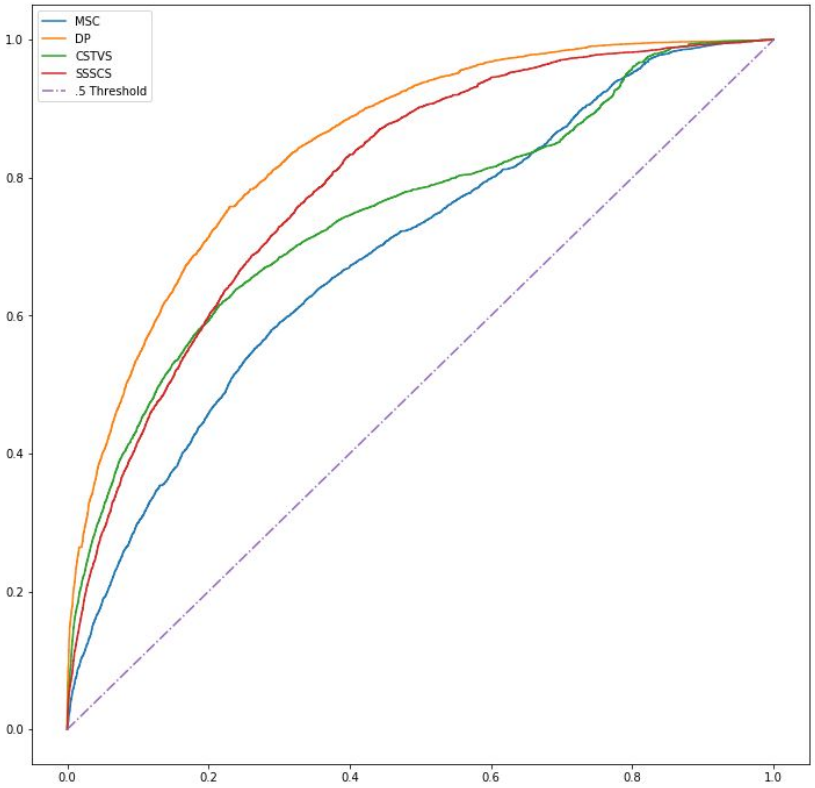

```
fig_roc_1 = plt.figure(figsize=(12,12),facecolor='w')
for i in range(1,11):
    fpr, tpr, thresholds = roc_curve(tweet_encoded['irma_rel'],tweet_encoded[f'MM_score_window_{i}'])
    plt.plot(fpr,tpr)
plt.plot([0,1],[0,1])
plt.show()
```



Topics for next week:

- Supporting documentation for Word2Vec in Twitter analysis
- Clean up related code for results.

Methodology:



Word2Vec in Twitter:

A. Benton, R. Arora, and M. Dredze, “Learning Multiview Embeddings of Twitter Users,” in Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers), Berlin, Germany, 2016, pp. 14–19.

M. Imran, P. Mitra, and C. Castillo, “Twitter as a Lifeline: Human-annotated Twitter Corpora for NLP of Crisis-related Messages,” arXiv:1605.05894 [cs], May 2016.

W. Ling, C. Dyer, A. W. Black, and I. Trancoso, “Two/Too Simple Adaptations of Word2Vec for Syntax Problems,” in Proceedings of the 2015 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Denver, Colorado, 2015, pp. 1299–1304.

N. Ben-Lhachemi and E. H. Nfaoui, “Using Tweets Embeddings For Hashtag Recommendation in Twitter,” Procedia Computer Science, vol. 127, pp. 7–15, 2018.

X. Yang, C. Macdonald, and I. Ounis, “Using Word Embeddings in Twitter Election Classification,” arXiv:1606.07006 [cs], Jun. 2016.