* model1

param grid:

n = [1~7], leaerning decay = [0.5, 0.7, 0.9]

pos:

Best Parameter : {'learning\_decay': 0.9, 'learning\_method': 'online', 'n\_components': 1}

neg:

Best Parameter : {'learning\_decay': 0.7, 'learning\_method': 'online', 'n\_components': 1}

* model2

param grid:

n = [1], leaerning decay = [0.6, 0.7, 0.8, 0.9]

pos:

Best Parameter : {'learning\_decay': 0.8, 'learning\_method': 'online', 'n\_components': 1}

neg:

Best Parameter : {'learning\_decay': 0.8, 'learning\_method': 'online', 'n\_components': 1}

* Online Final

Param Grid :

n = [1], Learning Decay = [0.5, 0.7, 0.75, 0.8, 0.9]

* POS

Best Parameter : {'learning\_decay': 0.75, 'learning\_method': 'online', 'n\_components': 1}

Model Log Likelihood Score: -528795.2470952942

Model Perplexity: 339.74406139959166

* NEG

Best Parameter : {'learning\_decay': 0.7, 'learning\_method': 'online', 'n\_components': 1}

Model Log Likelihood Score: -15930.84623987137

Model Perplexity: 51.73220520103631

* Fixed Dataframe choosing ratio
* LDA\_model selecting word standards
* Result Column names