

```
1 /Users/nelsonquintanilla/.conda/envs/dissertation/bin/python /Users/nelsonquintanilla/  
Documents/repos/nfq160/dissertation/main.py  
2 Console output is saving to: /Users/nelsonquintanilla/Documents/repos/nfq160/  
dissertation/console_logs  
3 /Users/nelsonquintanilla/.conda/envs/dissertation/lib/python3.10/site-packages/past/  
builtins/misc.py:45: DeprecationWarning: the imp module is deprecated in favour of  
importlib and slated for removal in Python 3.12; see the module's documentation for  
alternative uses  
4     from imp import reload  
5  
6 Data before pre-processing  
7 Number of articles: 2275  
8 Average word count per article: 864 words  
9  
10 Normalisation and tokenization  
11  
12 Stop Words Removal 1  
13 total of words, stop words removal 1: 936803  
14  
15 Lemmatisation  
16 total of words, lemmatisation: 936830  
17  
18 Stop Words Removal 2  
19 total of words, stop words removal 2: 890414  
20  
21 Transform the documents to a vectorized form  
22  
23 Number of tokens and documents to train  
24 Number of unique tokens: 31492  
25 Number of documents: 2275  
26  
27 Building the Topic Model  
28  
29 Training model for 6  
30 /Users/nelsonquintanilla/.conda/envs/dissertation/lib/python3.10/site-packages/past/  
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38 alternative uses
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44
45 Training model for 8
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59     from imp import reload
60
61 Training model for 10
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   importlib and slated for removal in Python 3.12; see the module's documentation for
   alternative uses
75   from imp import reload
76
77 View the topics in LDA mode
78
79 Topics for a model trained for 6 number of topics
80 [(0,
81   '0.009*"uk" + 0.008*"government" + 0.006*"sanction" + 0.006*"gas" +
82   '0.005*"company" + 0.004*"home" + 0.004*"refugee" + 0.004*"include" +
83   '0.004*"family" + 0.004*"new"'),
84 (1,
85   '0.010*"putin" + 0.007*"president" + 0.006*"military" + 0.006*"minister" +
86   '0.006*"eu" + 0.006*"nato" + 0.005*"force" + 0.005*"sanction" +
87   '0.005*"invasion" + 0.005*"zelenskiy"),
88 (2,
89   '0.008*"macron" + 0.006*"le" + 0.006*"price" + 0.006*"pen" + 0.006*"party" +
90   '0.006*"food" + 0.005*"election" + 0.005*"vote" + 0.005*"france" +
91   '0.005*"right"),
92 (3,
93   '0.012*"force" + 0.009*"kyiv" + 0.006*"civilian" + 0.006*"military" +
94   '0.006*"mariupol" + 0.006*"attack" + 0.005*"soldier" + 0.005*"kill" +
95   '0.005*"region" + 0.004*"leave"),
96 (4,
97   '0.004*"time" + 0.004*"work" + 0.004*"like" + 0.004*"know" + 0.004*"tell" +
98   '0.004*"putin" + 0.003*"family" + 0.003*"man" + 0.003*"come" + 0.003*"want"),
99 (5,
100  '0.006*"israel" + 0.005*"world" + 0.005*"israeli" + 0.004*"soviet" +
101  '0.003*"medvedchuk" + 0.003*"medvedev" + 0.003*"nazi" + 0.003*"palestinian" +
102  '+ 0.002*"abortion" + 0.002*"jewish")]
103

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104 For model with k = 6
105 Document Topics for document # 1104 = [(3, 0.92687494), (5, 0.07158236)]
106 Document Topics for document # 1211 = [(1, 0.31637153), (3, 0.68144804)]
107 Document Topics for document # 1487 = [(1, 0.528232), (3, 0.21981631), (4, 0.2508937)]
108 Document Topics for document # 1439 = [(3, 0.410914), (4, 0.5876042)]
109 Document Topics for document # 876 = [(1, 0.06783629), (3, 0.18904561), (4, 0.7418756)]
110
111 Topics for a model trained for 8 number of topics
112 [(0,
113   '0.010*"government" + 0.009*"uk" + 0.009*"gas" + 0.006*"company" + '
114   '0.006*"refugee" + 0.005*"energy" + 0.005*"home" + 0.005*"visa" + '
115   '0.005*"family" + 0.004*"germany"' ),
116 (1,
117   '0.008*"putin" + 0.008*"military" + 0.007*"force" + 0.007*"president" + '
118   '0.006*"nato" + 0.006*"minister" + 0.006*"zelenskiy" + 0.005*"moscow" + '
119   '0.005*"defence" + 0.005*"invasion"' ),
120 (2,
121   '0.010*"macron" + 0.008*"le" + 0.008*"price" + 0.007*"pen" + 0.007*"food" + '
122   '0.006*"france" + 0.006*"grain" + 0.005*"vote" + 0.005*"french" + '
123   '0.005*"port"' ),
124 (3,
125   '0.011*"force" + 0.009*"kyiv" + 0.007*"civilian" + 0.006*"mariupol" + '
126   '0.006*"soldier" + 0.005*"attack" + 0.005*"kill" + 0.005*"military" + '
127   '0.004*"leave" + 0.004*"region"' ),
128 (4,
129   '0.005*"tell" + 0.005*"work" + 0.004*"family" + 0.004*"time" + 0.004*"know" '
130   '+ 0.004*"leave" + 0.004*"like" + 0.004*"man" + 0.003*"news" + '
131   '0.003*"group"' ),
132 (5,
133   '0.005*"medvedchuk" + 0.005*"medvedev" + 0.005*"african" + 0.004*"world" + '
134   '0.003*"china" + 0.003*"africa" + 0.002*"trophy" + 0.002*"road" + '
135   '0.002*"schevchenko" + 0.002*"time"' ),
136 (6,
137   '0.009*"putin" + 0.005*"soviet" + 0.005*"world" + 0.004*"like" + '
138   '0.004*"time" + 0.004*"think" + 0.003*"right" + 0.003*"crime" + 0.003*"new" '
139   '+ 0.003*"gorbachev"' ),
140 (7,
141   '0.011*"eu" + 0.010*"sanction" + 0.009*"putin" + 0.006*"government" + '
142   '0.005*"uk" + 0.005*"european" + 0.004*"abramovich" + 0.004*"minister" + '
143   '0.004*"include" + 0.003*"party"' )
144
145 For model with k = 8
146 Document Topics for document # 1104 = [(3, 0.8338547), (6, 0.16442028)]
147 Document Topics for document # 1211 = [(1, 0.4186689), (3, 0.57889444)]
148 Document Topics for document # 1487 = [(1, 0.591819), (3, 0.10507746), (4, 0.30178988)]
149 Document Topics for document # 1439 = [(3, 0.51659614), (4, 0.3804339), (6, 0.10158729)
  )]
150 Document Topics for document # 876 = [(3, 0.15242092), (4, 0.8043171), (7, 0.041722063
  )]
151
152 Topics for a model trained for 10 number of topics
153 [(0,
154   '0.012*"gas" + 0.010*"company" + 0.008*"government" + 0.007*"sanction" + '
155   '0.007*"energy" + 0.005*"germany" + 0.005*"include" + 0.005*"state" + '
156   '0.004*"business" + 0.004*"supply"' ),
157 (1,
158   '0.009*"force" + 0.009*"military" + 0.007*"putin" + 0.007*"president" + '

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159   '0.006*"zelenskiy" + 0.006*"nato" + 0.006*"defence" + 0.006*"moscow" + '
160   '0.006*"minister" + 0.005*"invasion"'),
161 (2,
162   '0.011*"price" + 0.010*"food" + 0.010*"grain" + 0.009*"port" + 0.008*"world" +
163   '+ 0.007*"export" + 0.006*"global" + 0.006*"oil" + 0.005*"crisis" +
164   '0.005*"sea"'),
165 (3,
166   '0.010*"force" + 0.009*"kyiv" + 0.006*"civilian" + 0.006*"soldier" +
167   '0.006*"mariupol" + 0.005*"kill" + 0.005*"leave" + 0.005*"attack" +
168   '0.004*"military" + 0.004*"child"'),
169 (4,
170   '0.005*"tell" + 0.004*"time" + 0.004*"man" + 0.004*"military" + 0.004*"work" +
171   '+ 0.004*"family" + 0.004*"know" + 0.003*"group" + 0.003*"soldier" +
172   '0.003*"official"'),
173 (5,
174   '0.006*"medvedchuk" + 0.006*"african" + 0.004*"world" + 0.003*"africa" +
175   '0.003*"western" + 0.003*"china" + 0.003*"group" + 0.002*"time" +
176   '0.002*"soviet" + 0.002*"road"'),
177 (6,
178   '0.010*"putin" + 0.007*"soviet" + 0.006*"world" + 0.005*"crime" +
179   '0.004*"gorbachev" + 0.004*"court" + 0.004*"international" +
180   '0.003*"president" + 0.003*"state" + 0.003*"time"'),
181 (7,
182   '0.014*"eu" + 0.010*"putin" + 0.010*"sanction" + 0.006*"european" +
183   '0.006*"government" + 0.005*"uk" + 0.004*"minister" + 0.004*"germany" +
184   '0.004*"leader" + 0.004*"president"'),
185 (8,
186   '0.007*"uk" + 0.007*"government" + 0.006*"refugee" + 0.006*"home" +
187   '0.006*"macron" + 0.005*"family" + 0.005*"right" + 0.005*"china" +
188   '0.004*"visa" + 0.004*"new"'),
189 (9,
190   '0.010*"putin" + 0.008*"protest" + 0.006*"opposition" + 0.006*"medium" +
191   '0.006*"orban" + 0.005*"channel" + 0.005*"kremlin" + 0.005*"moscow" +
192   '0.005*"invasion" + 0.004*"russians")]
193
194 For model with k = 10
195 Document Topics for document # 1104 = [(3, 0.7936872), (6, 0.20447128)]
196 Document Topics for document # 1211 = [(1, 0.49016154), (3, 0.507243)]
197 Document Topics for document # 1487 = [(1, 0.58422875), (4, 0.41409102)]
198 Document Topics for document # 1439 = [(3, 0.6757574), (4, 0.13201115), (6, 0.19068162)
    )]
199 Document Topics for document # 876 = [(0, 0.033564787), (3, 0.106960125), (4, 0.8577532
    )]
200
201 Compute Perplexity
202
203 Compute Topic Coherence Score
204 /Users/nelsonquintanilla/.conda/envs/dissertation/lib/python3.10/site-packages/past/
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importlib and slated for removal in Python 3.12; see the module's documentation for
alternative uses
245     from imp import reload
246 (list_index, number_topics, c_v_coherence, perplexity)
247 [(1, 6, 0.4154494435587679, -8.160747537346543),
248 (2, 8, 0.40886869300478706, -8.164581199888314),
249 (3, 10, 0.4156638767054496, -8.161410444726444)]
250
251 Visualize the topics
252 /Users/nelsonquintanilla/.conda/envs/dissertation/lib/python3.10/site-packages/pyLDAvis
/_prepare.py:247: FutureWarning: In a future version of pandas all arguments of
DataFrame.drop except for the argument 'labels' will be keyword-only.
253     by='salience', ascending=False).head(R).drop('salience', 1)
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    /_prepare.py:247: FutureWarning: In a future version of pandas all arguments of
        DataFrame.drop except for the argument 'labels' will be keyword-only.
359     by='saliency', ascending=False).head(R).drop('saliency', 1)
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