# Lab-3

## March 13, 2024

## 1) Import Libraries

```
[]: import pandas as pd
import re
import string
import nltk
from nltk.corpus import stopwords
from nltk.stem import PorterStemmer
```

## 2) Load Data

```
[]: data = pd.read_csv("train.csv")
data
```

```
[]:
                  id keyword location
                   1
                           NaN
                                       NaN
      1
                   4
                           NaN
                                       NaN
      2
                   5
                           NaN
                                       {\tt NaN}
      3
                   6
                           NaN
                                       {\tt NaN}
      4
                   7
                           NaN
                                       {\tt NaN}
      7608
             10869
                           {\tt NaN}
                                       {\tt NaN}
      7609
              10870
                           NaN
                                       NaN
      7610 10871
                           {\tt NaN}
                                       NaN
      7611
             10872
                           NaN
                                       NaN
      7612 10873
                           {\tt NaN}
                                       NaN
```

|      | text   | target |
|------|--|--------|
| 0    | Our Deeds are the Reason of this #earthquake M | 1      |
| 1    | Forest fire near La Ronge Sask. Canada         | 1      |
| 2    | All residents asked to 'shelter in place' are  | 1      |
| 3    | 13,000 people receive #wildfires evacuation or | 1      |
| 4    | Just got sent this photo from Ruby #Alaska as  | 1      |
|      |  |        |
| 7608 | Two giant cranes holding a bridge collapse int | 1      |
| 7609 | @aria_ahrary @TheTawniest The out of control w | 1      |
| 7610 | M1.94 [01:04 UTC]?5km S of Volcano Hawaii. htt | 1      |
| 7611 | Police investigating after an e-bike collided  | 1      |
| 7612 | The Latest: More Homes Razed by Northern Calif | 1      |

#### [7613 rows x 5 columns]

```
[]: df = data[['text', 'target']]
     df['text'] = df['text'].str.lower()
     df
    C:\Users\d-kin\AppData\Local\Temp\ipykernel_13348\1695621088.py:2:
    SettingWithCopyWarning:
    A value is trying to be set on a copy of a slice from a DataFrame.
    Try using .loc[row_indexer,col_indexer] = value instead
    See the caveats in the documentation: https://pandas.pydata.org/pandas-
    docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
      df['text'] = df['text'].str.lower()
[]:
                                                         text target
     0
           our deeds are the reason of this #earthquake m...
                                                                  1
     1
                      forest fire near la ronge sask. canada
                                                                    1
     2
           all residents asked to 'shelter in place' are ...
                                                                  1
     3
           13,000 people receive #wildfires evacuation or...
                                                                  1
           just got sent this photo from ruby #alaska as ...
     7608 two giant cranes holding a bridge collapse int...
                                                                  1
    7609 @aria_ahrary @thetawniest the out of control w...
                                                                  1
     7610 m1.94 [01:04 utc]?5km s of volcano hawaii. htt...
                                                                  1
     7611 police investigating after an e-bike collided ...
     7612 the latest: more homes razed by northern calif...
     [7613 rows x 2 columns]
      3) Clean Data
[]: url = "https://www.somesite.com This is othe text."
     pattern = re.compile(r'https?://\S*')
     pattern.findall(url)
[]: ['https://www.somesite.com']
[]: pattern.sub("$$$", url)
[]: '$$$ This is othe text.'
[]: df['text'] = df['text'].apply(lambda x: pattern.sub("", x))
     df.head(50)
    C:\Users\d-kin\AppData\Local\Temp\ipykernel_13348\3698504754.py:1:
```

#### SettingWithCopyWarning:

A value is trying to be set on a copy of a slice from a DataFrame. Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user\_guide/indexing.html#returning-a-view-versus-a-copy df['text'] = df['text'].apply(lambda x: pattern.sub("", x))

```
[]:
                                                         text target
     0
         our deeds are the reason of this #earthquake m...
                                                                   1
     1
                     forest fire near la ronge sask. canada
                                                                     1
     2
         all residents asked to 'shelter in place' are ...
                                                                   1
         13,000 people receive #wildfires evacuation or...
     3
     4
         just got sent this photo from ruby #alaska as ...
     5
         #rockyfire update => california hwy. 20 closed...
         #flood #disaster heavy rain causes flash flood...
     6
                                                                   1
     7
         i'm on top of the hill and i can see a fire in...
                                                                   1
         there's an emergency evacuation happening now ...
     8
                                                                   1
     9
         i'm afraid that the tornado is coming to our a...
                                                                   1
                three people died from the heat wave so far
                                                                     1
     10
         haha south tampa is getting flooded hah- wait ...
                                                                   1
         #raining #flooding #florida #tampabay #tampa 1...
     12
     13
                    #flood in bago myanmar #we arrived bago
                                                                     1
     14
         damage to school bus on 80 in multi car crash ...
                                                                   1
     15
                                              what's up man?
                                                                     0
     16
                                                i love fruits
                                                                     0
     17
                                            summer is lovely
                                                                     0
     18
                                           my car is so fast
                                                                     0
     19
                                what a goooooooaaaaaal!!!!!!
                                                                     0
     20
                                      this is ridiculous...
     21
                                           london is cool;)
                                                                     0
     22
                                                  love skiing
                                                                     0
     23
                                       what a wonderful day!
                                                                     0
     24
                                                                     0
                                                     10000001
                             no way...i can't eat that shit
     25
     26
                                       was in nyc last week!
                                                                     0
     27
                                          love my girlfriend
                                                                     0
     28
                                                    cooool :)
                                                                     0
     29
                                          do you like pasta?
                                                                     0
     30
                                                     the end!
                                                                     0
     31
                          Obbcmtd wholesale markets ablaze
                                                                     1
             we always try to bring the heavy. #metal #rt
                                                                     0
     32
     33
         #africanbaze: breaking news:nigeria flag set a...
     34
                         crying out for more! set me ablaze
                                                                     0
     35
         on plus side look at the sky last night it was...
         Ophdsquares #mufc they've built so much hype a...
     36
     37
                          inec office in abia set ablaze -
                                                                     1
```

```
38
         barbados #bridgetown jamaica ûò two cars set ...
     39
                                     ablaze for you lord :d
                                                                   0
     40
                                 check these out:
                                                                   0
     41
         on the outside you're ablaze and alive\nbut yo...
                                                                 0
        had an awesome time visiting the cfc head offi...
                                                                 0
     43
              soooo pumped for ablaze ???? @southridgelife
                                                                   0
     44
         i wanted to set chicago ablaze with my preachi...
                                                                 0
         i gained 3 followers in the last week. you? kn...
                                                                 0
                                                                 1
        how the west was burned: thousands of wildfire...
         building the perfect tracklist to life leave t...
                                                                 0
     48
                                 check these out:
                                                                   0
     49
        first night with retainers in. it's quite weir...
                                                                 0
[]: string.punctuation
[]: '!"#$%&\'()*+,-./:;<=>?@[\\]^ `{|}~'
[]: text = "Hello $# world ?% find *() this <>"
     pattern2 = re.compile(r'[^\w\s]')
     pattern2.findall(text)
[]: ['$', '#', '?', '%', '*', '(', ')', '<', '>']
[]: df['text'] = df['text'].apply(lambda x: pattern2.sub("", x))
     df.head(50)
    C:\Users\d-kin\AppData\Local\Temp\ipykernel_13348\754453846.py:1:
    SettingWithCopyWarning:
    A value is trying to be set on a copy of a slice from a DataFrame.
    Try using .loc[row_indexer,col_indexer] = value instead
    See the caveats in the documentation: https://pandas.pydata.org/pandas-
    docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
      df['text'] = df['text'].apply(lambda x: pattern2.sub("", x))
[]:
                                                       text target
     0
         our deeds are the reason of this earthquake ma...
     1
                     forest fire near la ronge sask canada
                                                                   1
     2
         all residents asked to shelter in place are be...
                                                                 1
     3
         13000 people receive wildfires evacuation orde...
                                                                 1
     4
         just got sent this photo from ruby alaska as s...
                                                                 1
         rockyfire update california hwy 20 closed in ...
                                                                 1
     5
         flood disaster heavy rain causes flash floodin...
                                                                 1
     7
         im on top of the hill and i can see a fire in \dots
     8
         theres an emergency evacuation happening now i...
                                                                 1
     9
          im afraid that the tornado is coming to our area
                                                                   1
     10
               three people died from the heat wave so far
                                                                   1
         haha south tampa is getting flooded hah wait a...
                                                                 1
     11
```

```
raining flooding florida tampabay tampa 18 or ...
     12
     13
                      flood in bago myanmar we arrived bago
                                                                    1
     14
         damage to school bus on 80 in multi car crash ...
                                                                   1
     15
                                                whats up man
                                                                    0
                                               i love fruits
                                                                    0
     16
     17
                                            summer is lovely
                                                                    0
     18
                                           my car is so fast
                                                                    0
     19
                                     what a goooooooaaaaaal
                                                                    0
     20
                                          this is ridiculous
                                                                    0
     21
                                             london is cool
                                                                    0
     22
                                                 love skiing
                                                                    0
     23
                                        what a wonderful day
                                                                    0
     24
                                                     10000001
                                                                    0
     25
                                 no wayi cant eat that shit
                                                                    0
     26
                                        was in nyc last week
                                                                    0
     27
                                          love my girlfriend
                                                                    0
     28
                                                                    0
                                                      cooool
     29
                                                                    0
                                           do you like pasta
     30
                                                      the end
                                                                    0
     31
                           bbcmtd wholesale markets ablaze
                                                                    1
     32
                we always try to bring the heavy metal rt
                                                                    0
         africanbaze breaking newsnigeria flag set abla...
     33
     34
                          crying out for more set me ablaze
                                                                    0
         on plus side look at the sky last night it was...
     35
                                                                   0
         phdsquares mufc theyve built so much hype arou...
     36
     37
                           inec office in abia set ablaze
                                                                    1
     38
         barbados bridgetown jamaica ûò two cars set ab...
                                                                  1
     39
                                       ablaze for you lord d
                                                                    0
     40
                                    check these out
                                                                    0
         on the outside youre ablaze and alive\nbut you...
     41
                                                                   0
     42
         had an awesome time visiting the cfc head offi...
                                                                  0
     43
                    soooo pumped for ablaze southridgelife
                                                                    0
     44
         i wanted to set chicago ablaze with my preachi...
                                                                   0
     45
         i gained 3 followers in the last week you know...
         how the west was burned thousands of wildfires...
                                                                  1
     47
         building the perfect tracklist to life leave t...
     48
                                    check these out
                                                                    0
     49
         first night with retainers in its quite weird ...
                                                                  0
      4) Stemming of the vocabulary
[]: [_ for _ in text.split()]
[]: ['Hello', '$#', 'world', '?%', 'find', '*()', 'this', '<>']
[]: df['text'] = df['text'].apply(lambda x: [_ for _ in x.split()])
     df['text'].head(20)
```

```
C:\Users\d-kin\AppData\Local\Temp\ipykernel_13348\2964385030.py:1:
    SettingWithCopyWarning:
    A value is trying to be set on a copy of a slice from a DataFrame.
    Try using .loc[row_indexer,col_indexer] = value instead
    See the caveats in the documentation: https://pandas.pydata.org/pandas-
    docs/stable/user guide/indexing.html#returning-a-view-versus-a-copy
      df['text'] = df['text'].apply(lambda x: [_ for _ in x.split()])
[]:0
           [our, deeds, are, the, reason, of, this, earth...
     1
               [forest, fire, near, la, ronge, sask, canada]
     2
           [all, residents, asked, to, shelter, in, place...
     3
           [13000, people, receive, wildfires, evacuation...
     4
           [just, got, sent, this, photo, from, ruby, ala...
     5
           [rockyfire, update, california, hwy, 20, close...
     6
           [flood, disaster, heavy, rain, causes, flash, ...
     7
           [im, on, top, of, the, hill, and, i, can, see,...
     8
           [theres, an, emergency, evacuation, happening,...
     9
           [im, afraid, that, the, tornado, is, coming, t...
           [three, people, died, from, the, heat, wave, s...
     10
     11
           [haha, south, tampa, is, getting, flooded, hah...
     12
           [raining, flooding, florida, tampabay, tampa, ...
     13
               [flood, in, bago, myanmar, we, arrived, bago]
     14
           [damage, to, school, bus, on, 80, in, multi, c...
     15
                                              [whats, up, man]
     16
                                             [i, love, fruits]
     17
                                          [summer, is, lovely]
     18
                                      [my, car, is, so, fast]
     19
                                   [what, a, goooooooaaaaaal]
     Name: text, dtype: object
[]: # nltk.download('stopwords')
     eng_stop = stopwords.words('English')
     eng_stop
[]:['i',
      'me',
      'my',
      'myself',
      'we',
      'our',
      'ours',
      'ourselves',
      'you',
      "you're",
      "you've",
      "you'll",
      "you'd",
```

```
'your',
'yours',
'yourself',
'yourselves',
'he',
'him',
'his',
'himself',
'she',
"she's",
'her',
'hers',
'herself',
'it',
"it's",
'its',
'itself',
'they',
'them',
'their',
'theirs',
'themselves',
'what',
'which',
'who',
'whom',
'this',
'that',
"that'll",
'these',
'those',
'am',
'is',
'are',
'was',
'were',
'be',
'been',
'being',
'have',
'has',
'had',
'having',
'do',
'does',
'did',
'doing',
```

```
'a',
'an',
'the',
'and',
'but',
'if',
'or',
'because',
'as',
'until',
'while',
'of',
'at',
'by',
'for',
'with',
'about',
'against',
'between',
'into',
'through',
'during',
'before',
'after',
'above',
'below',
'to',
'from',
'up',
'down',
'in',
'out',
'on',
'off',
'over',
'under',
'again',
'further',
'then',
'once',
'here',
'there',
'when',
'where',
'why',
'how',
'all',
```

```
'any',
'both',
'each',
'few',
'more',
'most',
'other',
'some',
'such',
'no',
'nor',
'not',
'only',
'own',
'same',
'so',
'than',
'too',
'very',
's',
't',
'can',
'will',
'just',
'don',
"don't",
'should',
"should've",
'now',
'd',
'11',
'm',
'o',
're',
've',
'y',
'ain',
'aren',
"aren't",
'couldn',
"couldn't",
'didn',
"didn't",
'doesn',
"doesn't",
'hadn',
"hadn't",
```

```
'hasn',
      "hasn't",
      'haven',
      "haven't",
      'isn',
      "isn't",
      'ma',
      'mightn',
      "mightn't",
      'mustn',
      "mustn't".
      'needn',
      "needn't",
      'shan',
      "shan't",
      'shouldn',
      "shouldn't",
      'wasn',
      "wasn't",
      'weren',
      "weren't",
      'won',
      "won't",
      'wouldn',
      "wouldn't"]
[]: [_ for _ in text.split() if _ not in eng_stop]
[]: ['Hello', '$#', 'world', '?%', 'find', '*()', '<>']
[]: df['text'] = df['text'].apply(lambda x: [_ for _ in x if _ not in eng_stop])
     df['text'].head(20)
    C:\Users\d-kin\AppData\Local\Temp\ipykernel_13348\3909481511.py:1:
    SettingWithCopyWarning:
    A value is trying to be set on a copy of a slice from a DataFrame.
    Try using .loc[row indexer,col indexer] = value instead
    See the caveats in the documentation: https://pandas.pydata.org/pandas-
    docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
      df['text'] = df['text'].apply(lambda x: [_ for _ in x if _ not in eng stop])
[]:0
           [deeds, reason, earthquake, may, allah, forgiv...
     1
               [forest, fire, near, la, ronge, sask, canada]
     2
           [residents, asked, shelter, place, notified, o...
     3
           [13000, people, receive, wildfires, evacuation...
     4
           [got, sent, photo, ruby, alaska, smoke, wildfi...
     5
           [rockyfire, update, california, hwy, 20, close...
```

```
6
           [flood, disaster, heavy, rain, causes, flash, ...
     7
                           [im, top, hill, see, fire, woods]
     8
           [theres, emergency, evacuation, happening, bui...
     9
                          [im, afraid, tornado, coming, area]
     10
                      [three, people, died, heat, wave, far]
     11
           [haha, south, tampa, getting, flooded, hah, wa...
     12
           [raining, flooding, florida, tampabay, tampa, ...
     13
                        [flood, bago, myanmar, arrived, bago]
     14
           [damage, school, bus, 80, multi, car, crash, b...
     15
                                                 [whats, man]
     16
                                               [love, fruits]
     17
                                             [summer, lovely]
     18
                                                  [car, fast]
     19
                                            [gooooooaaaaaal]
     Name: text, dtype: object
[]: st = PorterStemmer()
[]: st.stem("running")
[]: 'run'
[]: [st.stem(_) for _ in text.split()]
[]: ['hello', '$#', 'world', '?%', 'find', '*()', 'thi', '<>']
[]: df['text'] = df['text'].apply(lambda x: [st.stem(_) for _ in x])
     df['text'].head(20)
    C:\Users\d-kin\AppData\Local\Temp\ipykernel_13348\1317486952.py:1:
    SettingWithCopyWarning:
    A value is trying to be set on a copy of a slice from a DataFrame.
    Try using .loc[row_indexer,col_indexer] = value instead
    See the caveats in the documentation: https://pandas.pydata.org/pandas-
    docs/stable/user guide/indexing.html#returning-a-view-versus-a-copy
      df['text'] = df['text'].apply(lambda x: [st.stem(_) for _ in x])
[]: 0
           [deed, reason, earthquak, may, allah, forgiv, us]
                [forest, fire, near, la, rong, sask, canada]
     1
     2
           [resid, ask, shelter, place, notifi, offic, ev...
     3
           [13000, peopl, receiv, wildfir, evacu, order, ...
     4
           [got, sent, photo, rubi, alaska, smoke, wildfi...
     5
           [rockyfir, updat, california, hwi, 20, close, ...
     6
           [flood, disast, heavi, rain, caus, flash, floo...
     7
                             [im, top, hill, see, fire, wood]
     8
           [there, emerg, evacu, happen, build, across, s...
     9
                            [im, afraid, tornado, come, area]
```

```
[three, peopl, die, heat, wave, far]
     11
           [haha, south, tampa, get, flood, hah, wait, se...
     12
           [rain, flood, florida, tampabay, tampa, 18, 19...
     13
                          [flood, bago, myanmar, arriv, bago]
     14
           [damag, school, bu, 80, multi, car, crash, break]
     15
                                                    [what, man]
                                                 [love, fruit]
     16
     17
                                                 [summer, love]
                                                    [car, fast]
     18
     19
                                             [gooooooaaaaaal]
     Name: text, dtype: object
      5) Create Vocabulary Dictionary
[]: dictionary = []
     for rows in df['text']:
         for word in rows:
             dictionary.append(word)
     dictionary = list(set(dictionary))
     dictionary
[]: ['strang',
      'cannib',
      '662',
      'tent',
      'hair',
      'sin',
      'andrew',
      'show',
      'jitter',
      'benkin97',
      'edt',
      'barrack',
      'unwant',
      'institut',
      'chpsre',
      'salvag',
      'hashtag',
      'ng2x5',
      '7510880',
      '600',
      'shortfal',
      'panoram',
      'tragedi',
      'yyeso',
      'kendal',
      '21',
```

10

```
'nightsad',
'attila',
'ransack',
'snazzychipz',
'flare',
'morehouse64',
'dispensari',
'baduû_',
'festac',
'requiem',
'0025',
'charcoal',
'real_liam_payn',
'gr',
'fleek',
'tremblayeh',
'appli',
'fallen',
'ear',
'midweek',
'oooh',
'mk',
'tmake',
'camilacabello97',
'tak',
'revel',
'182624',
'barrier',
'teeth',
'about',
'slam',
'noodl',
'ûïhatchet',
'surround',
'khuzdar',
'prefer',
'envis',
'tech',
'stallion150',
'sto',
'worth',
'sirtophamhat',
'2015',
'milita',
'ganseyman',
'9km',
'emv',
```

```
'sponsor',
'fang',
'cascad',
'fullscreen',
'nuclear',
'afterhaiyan',
'meellltt',
'cachet',
'forney',
'teamatowinn',
'randomthought',
'ted',
'stat',
'packag',
'hvnewsnetwork',
'crimin',
'wmata',
'mmda',
'indiefilm',
'helo',
'7speed',
'banquet',
'sink',
'1d',
'massag',
'cutter',
'hinata',
'jones94kyl',
'faro',
'jack',
'jersey',
'grief',
'msnbc',
'nh1new',
'troop',
'bangladesh',
'alexandrapullin',
'bieber',
'groom',
'conclus',
'squeaver',
'loui',
'omw',
'court',
'seismicresist',
'heyimbeeyt',
'chuckswindol',
```

```
'otherwisethey',
'eurocrisi',
'lolol',
'gloriavelez',
'regim',
'sheûª',
'greek',
'desper',
'ûhoax',
'ika',
'ici',
'christianvalu',
'maxi',
'stopû',
'madara',
'4tp_kotc',
'optimist',
'snowbal',
'bomber',
'competitor',
'unharm',
'7k',
'pkk',
'coleslaw',
'fuel',
'jenner',
'teeû_',
'area',
'queen',
'4193',
'teddi',
'baruch',
'gotthard',
'kiss',
'pak',
'bernardino',
'righteou',
'gmcr',
'deb117',
'book',
'njenga',
'abandonedp',
'profittothepeopl',
'blinker',
'fli',
'rd',
'kenji',
```

```
'fleet',
'rigour',
'raft',
'nasasolarsystem',
'18th',
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      6) Label Encode words in dictionary.
[]: word_set = {}
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