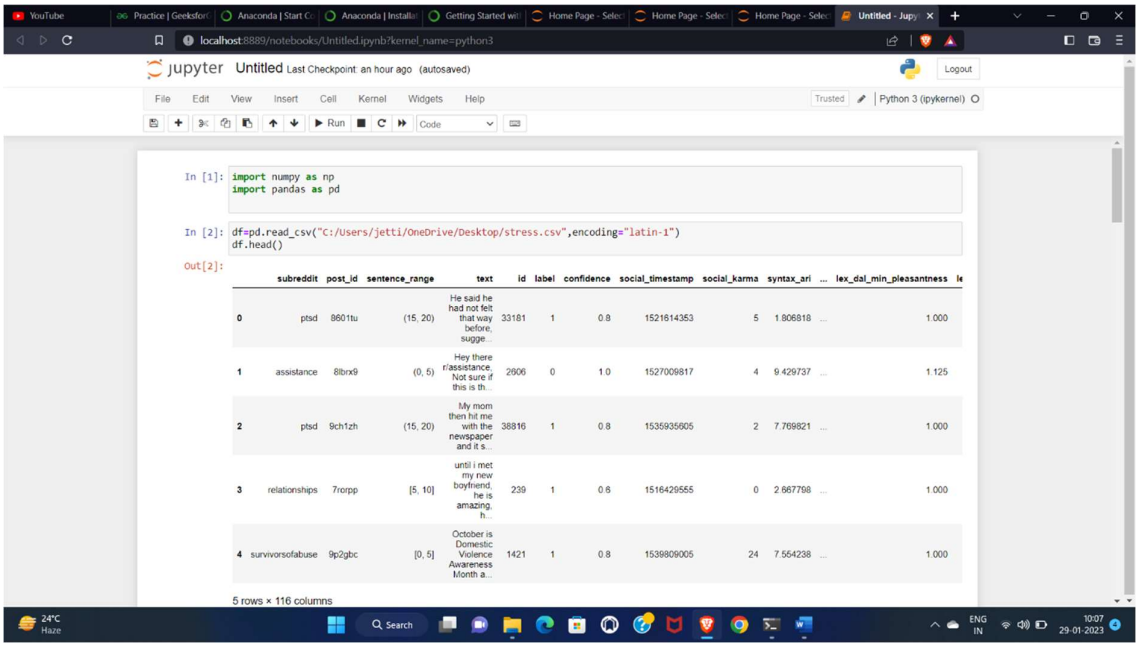
Sr. No	Title of paper	Name of Authors	Published year	Remarks
1.	Stress detection using deep neural networks	Russell Li and Zhandong Liu	2020	The need for manually created features is a drawback of conventional machine learning techniques. If features are incorrectly identified, accuracy declines. To address this deficiency, we developed two deep neural networks 1-dimensional (1D) convolutional neural network (chest worn sensor), it achieved 99.80% and 99.55% accuracy and multilayer perceptron neural network(wrist worn sensor), it achieved 99.65% and 98.38% accuracy.
2.	Machine Learning and IoT for Prediction and Detection of Stress.	Mr.Purnendu Shekhar Pandey BML	2017	Algorithms: Logistic Regression. Support Vector Machine (SVM). VF - 15 algorithm. Naive Bayes. VF - 15 with weights to features. The created prototype uses a person's heart rate variability to determine whether they are under stress.
3.	Stress Detection with Machine Learning and Deep Learning using Multimodal Physiological Data	Pramod Bobade and Vani M.	2020	Algorithms like K-Nearest Neighbour, Linear Discriminant Analysis, Random Forest, Decision Tree, AdaBoost and Kernel Support Vector Machine are used to compare the binary classifications and accuracies for three-class. The used dataset is WESAD dataset contains data from

				multiple physiological modalities like three-axis acceleration (ACC), respiration (RESP), electrodermal activity (EDA), electrocardiogram (ECG), body temperature (TEMP),electromyogram (EMG) and blood volume pulse (BVP) which is not available in other datasets, which makes this work suitable for the detection of stress in human being. This model has achieved the accuracy of 84.32% and 95.21% on a three-class and a binary classification problems
4.	A Decision Tree Optimised SVM Model for Stress Detection using Biosignals	Alana Paul Cruz, Aravind Pradeep, Kavali Riya Sivasankar and Krishnaveni K.S	2020	Test study was directed and substantiated for stress detection using database “drivedb” [Stress Recognition in Automobile Drivers] which was taken from the website Physionet. Initially, the model was trained using Cubic SVM with Gaussian Kernel. For a better model, here we have used Tree Optimised SVM which is a combination of Decision Tree and SVM algorithms. The classification is done using various QRS detection algorithms and other functions in MATLAB.
5.	Automatic Stress Detection Using Wearable Sensors and Machine Learning	Shruti Gedam and Sanchita Paul	2020	In this various methods of stress detection is explained.

				1. It is done by using wearable sensors and IOT devices. 2.Stress Detection through Physiological Signals 3.Stress Detection Using Microblogs 4.Stress Detection Using Videos 5.Stress Detection in Various Environments using Wearable Sensors Support vector machine, Random forest and K-Nearest Neighbour are the most effective classification algorithms. The drawback of this study is the extensive usage of several features that were associated with one another by the researchers, which lengthened computation times. Additionally, some of them collected physiological signals using expensive commercial equipment when it was possible to use inexpensive sensors.



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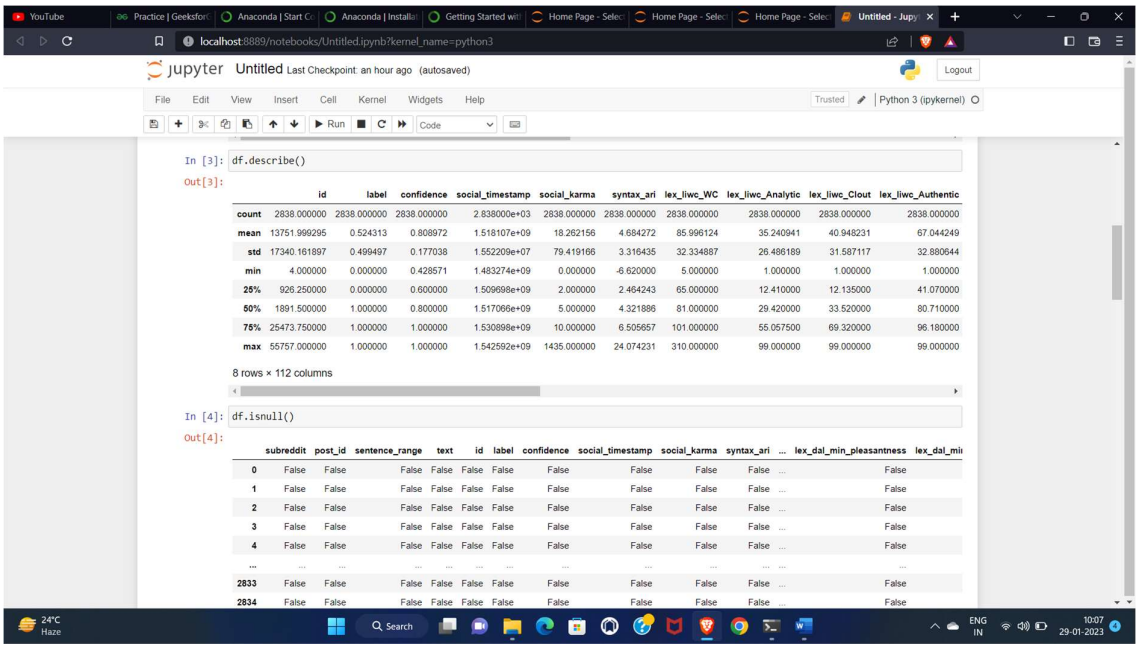
0	ptsd	8601tu	(15, 20)	He said he had not felt that way before, sugge...	33181	1	0.8	1521614353	5	1.806818	...	1.000	
1	assistance	8lbrx9	(0, 5)	Hey there r/assistance, Not sure if this is th...	2906	0	1.0	1527009817	4	9.429737	...	1.125	
2	ptsd	9ch1zh	(15, 20)	My mom then hit me with the newspaper and it s...	38816	1	0.8	1535935605	2	7.769821	...	1.000	
3	relationships	7rorpp	[5, 10]	until i met my new boyfriend, he is amazing, h...	239	1	0.6	1516429555	0	2.667798	...	1.000	
4	survivorsofabuse	9p2gbc	[0, 5]	October is Domestic Violence Awareness Month a...	1421	1	0.8	1539809005	24	7.554238	...	1.000	



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mean	13751.999295	0.524313	0.808972	1.518107e+09	18.262156	4.684272	85.996124	35.240941	40.948231	67.044249
std	17340.161897	0.499497	0.177038	1.552209e+07	79.419166	3.316435	32.334887	26.486189	31.587117	32.880644
min	4.000000	0.000000	0.428571	1.483274e+09	0.000000	-6.620000	5.000000	1.000000	1.000000	1.000000
25%	926.250000	0.000000	0.600000	1.509698e+09	2.000000	2.464243	65.000000	12.410000	12.135000	41.070000
50%	1891.500000	1.000000	0.800000	1.517066e+09	5.000000	4.321886	81.000000	29.420000	33.520000	80.710000
75%	25473.750000	1.000000	1.000000	1.530898e+09	10.000000	6.505657	101.000000	55.057500	69.320000	96.180000
max	55757.000000	1.000000	1.000000	1.542592e+09	1435.000000	24.074231	310.000000	99.000000	99.000000	99.000000

	subreddit	post_id	sentence_range	text	id	label	confidence	social_timestamp	social_karma	syntax_ari	...	lex_dal_min_pleasantness	lex_dal_mi
0	False	False	False	False	False	False	False	False	False	False	...	False	
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2	False	False	False	False	False	False	False	False	False	False	...	False	
3	False	False	False	False	False	False	False	False	False	False	...	False	
4	False	False	False	False	False	False	False	False	False	False	...	False	
...	...	...	...	...	...	...	...	...	...	...	...	...	
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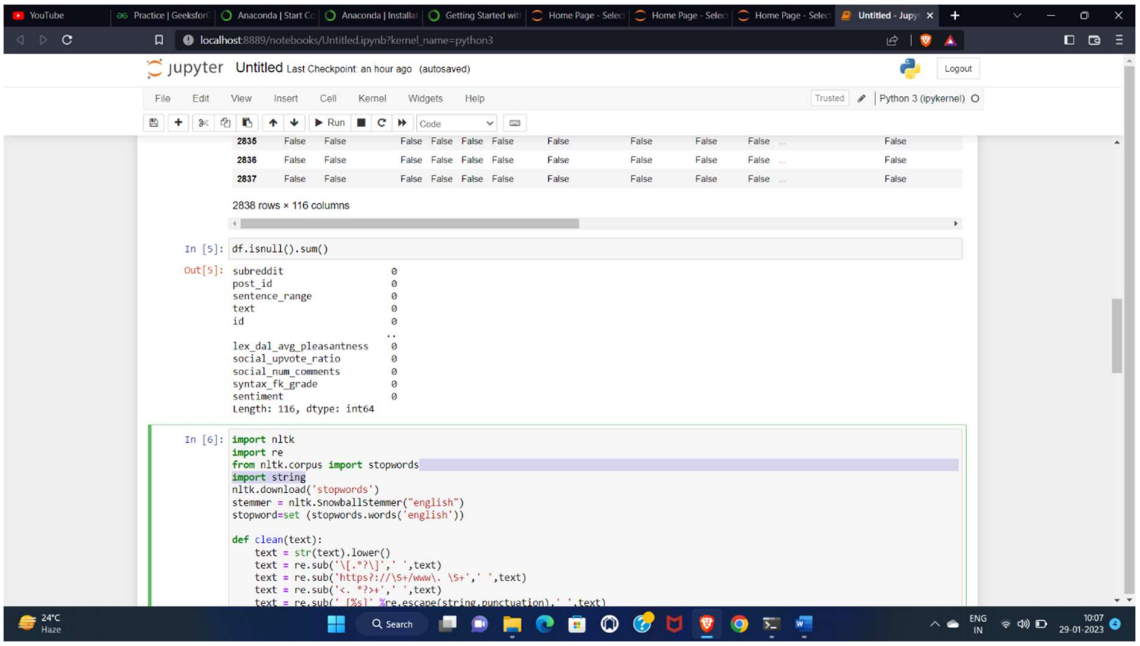
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Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted Python 3 (ipykernel)
Run Code
2838 rows × 116 columns
In [5]: df.isnull().sum()
Out[5]: subreddit 0
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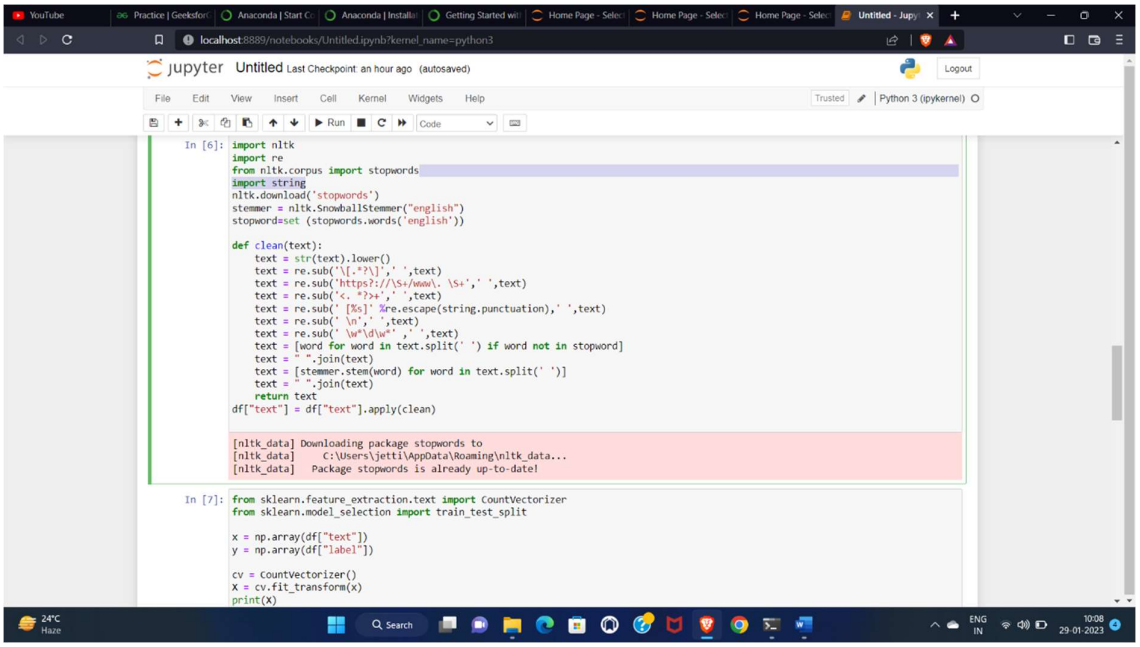
sentence_range 0
text 0
id 0
lex_dal_avg_pleasantness 0
social_upvote_ratio 0
social_num_comments 0
syntax_fk_grade 0
sentiment 0
Length: 116, dtype: int64
In [6]: import nltk
import re
from nltk.corpus import stopwords
import string
nltk.download('stopwords')
stemmer = nltk.SnowballStemmer("english")
stopword=set (stopwords.words('english'))
def clean(text):
text = str(text).lower()
text = re.sub('\[.*?\]',' ',text)
text = re.sub('https?://\S+/www\. \S+',' ',text)
text = re.sub('<. *?>+',' ',text)
text = re.sub(' [%s]' %re.escape(string.punctuation),' ',text)


jupyter Untitled Last Checkpoint: an hour ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted Python 3 (ipykernel)
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In [6]: import nltk
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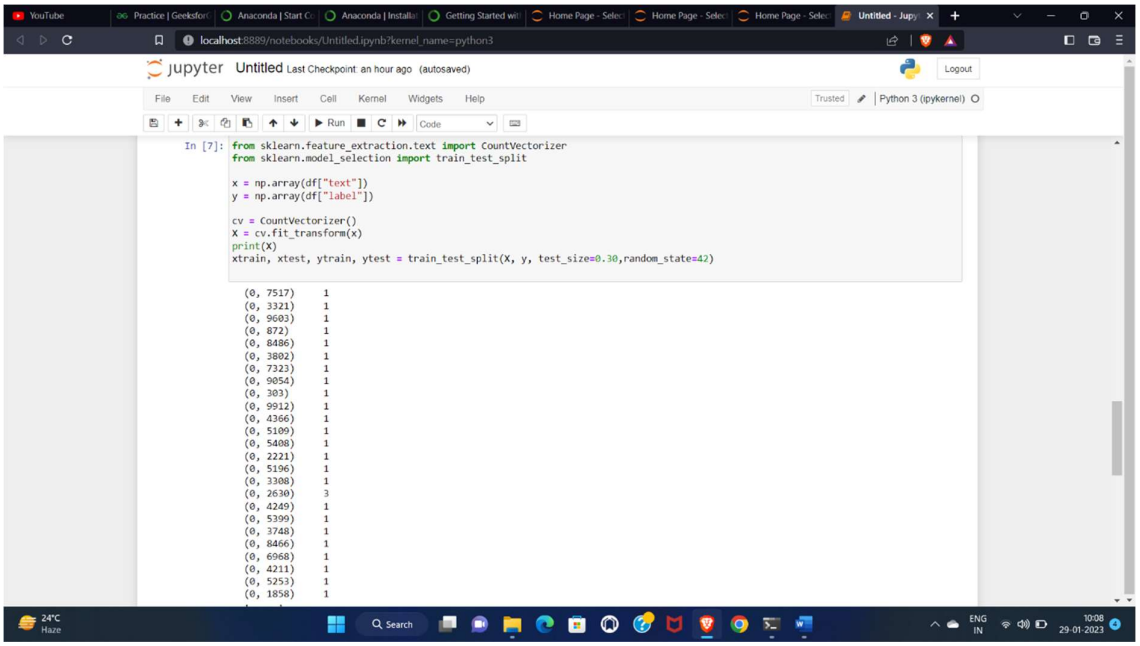
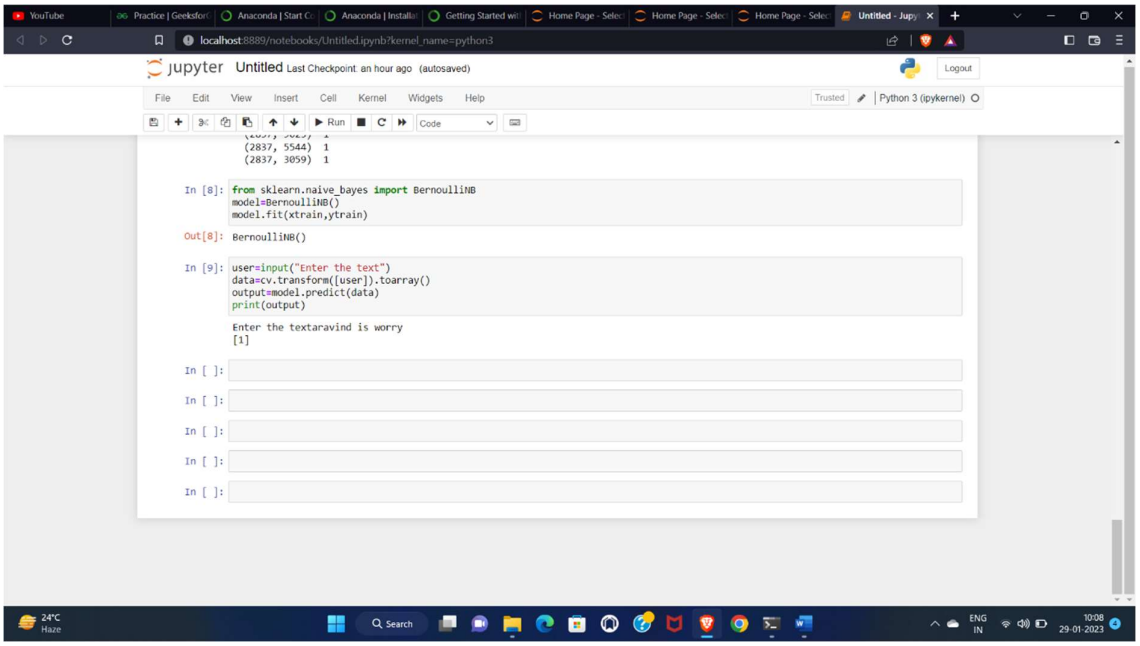
text = re.sub('<. *?>+',' ',text)
text = re.sub(' [%s]' %re.escape(string.punctuation),' ',text)
text = re.sub(' \n',' ',text)
text = re.sub(' \w*\d\w*' ,' ',text)
text = [word for word in text.split(' ') if word not in stopword]
text = " ".join(text)
text = [stemmer.stem(word) for word in text.split(' ')]
text = " ".join(text)
return text
df["text"] = df["text"].apply(clean)
[nltk_data] Downloading package stopwords to
[nltk_data] C:\Users\jetti\AppData\Roaming\nltk_data...
[nltk_data] Package stopwords is already up-to-date!
In [7]: from sklearn.feature_extraction.text import CountVectorizer
from sklearn.model_selection import train_test_split
x = np.array(df["text"])
y = np.array(df["label"])
cv = CountVectorizer()
X = cv.fit_transform(x)
print(X)



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text     id  label  \\\n0  He said he had not felt that way before,
sugge...  33181      1   \n1  Hey there r/assistance, Not sure if this is
th...   2606      0   \n2  My mom then hit me with the newspaper and it
s...  38816      1   \n3  until i met my new boyfriend, he is amazing, h...
239      1   \n4  October is Domestic Violence Awareness Month a...   1421
1   \n\n   confidence  social_timestamp  social_karma  syntax_ari  ...
\\\n0         0.8        1521614353             5    1.806818  ...   \n1
1.0        1527009817             4    9.429737  ...   \n2         0.8
1535935605             2    7.769821  ...   \n3         0.6
1516429555             0    2.667798  ...   \n4         0.8
1539809005            24    7.554238  ...   \n\n   lex_dal_min_pleasantness
lex_dal_min_activation  lex_dal_min_imagery  \\\n0
1.000                  1.1250                  1.0   \n1
1.125                  1.0000                  1.0   \n2
1.000                  1.1429                  1.0   \n3
1.000                  1.1250                  1.0   \n4
1.000                  1.1250                  1.0   \n\n
lex_dal_avg_activation  lex_dal_avg_imagery  lex_dal_avg_pleasantness
\\\n0                1.77000              1.52211
1.89556   \n1                1.69586              1.62045
1.88919   \n2                1.83088              1.58108
1.85828   \n3                1.75356              1.52114
1.98848   \n4                1.77644              1.64872
1.81456   \n\n   social_upvote_ratio  social_num_comments  syntax_fk_grade
sentiment  \n0                 0.86                    1         3.253573
-0.002742  \n1                 0.65                    2         8.828316
0.292857  \n2                0.67                   0         7.841667
0.011894  \n3                0.50                   5         4.104027
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lex_dal_min_activation\n      lex_dal_min_imagery\n
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lex_dal_avg_pleasantness\n      social_upvote_ratio\n
social_num_comments\n      syntax_fk_grade\n      sentiment\n    \n  \n  \n
\n      0\n      ptsd\n      8601tu\n      (15, 20)\n      He said he had
not felt that way before, sugge...\n      33181\n      1\n      0.8\n
1521614353\n      5\n      1.806818\n      ...\n      1.000\n      1.1250\n
1.0\n      1.77000\n      1.52211\n      1.89556\n      0.86\n      1\n
3.253573\n      -0.002742\n    \n    \n      1\n      assistance\n
8lbrx9\n      (0, 5)\n      Hey there r/assistance, Not sure if this is
th...\n      2606\n      0\n      1.0\n      1527009817\n      4\n
9.429737\n      ...\n      1.125\n      1.0000\n      1.0\n      1.69586\n
1.62045\n      1.88919\n      0.65\n      2\n      8.828316\n
0.292857\n    \n    \n      2\n      ptsd\n      9ch1zh\n      (15, 20)\n
My mom then hit me with the newspaper and it s...\n      38816\n      1\n
0.8\n      1535935605\n      2\n      7.769821\n      ...\n      1.000\n
1.1429\n      1.0\n      1.83088\n      1.58108\n      1.85828\n
0.67\n      0\n      7.841667\n      0.011894\n    \n    \n      3\n
relationships\n      7rorpp\n      [5, 10]\n      until i met my new
boyfriend, he is amazing, h...\n      239\n      1\n      0.6\n
1516429555\n      0\n      2.667798\n      ...\n      1.000\n      1.1250\n
1.0\n      1.75356\n      1.52114\n      1.98848\n      0.50\n      5\n
4.104027\n      0.141671\n    \n    \n      4\n      survivorsofabuse\n
9p2gbc\n      [0, 5]\n      October is Domestic Violence Awareness Month
a...\n      1421\n      1\n      0.8\n      1539809005\n      24\n
7.554238\n      ...\n      1.000\n      1.1250\n      1.0\n      1.77644\n
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5 rows × 116 columns

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35.240941\n      40.948231\n      67.044249\n      ...\n      1.088001\n
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std\n      17340.161897\n      0.499497\n      0.177038\n
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1.000000\n      ...\n      1.000000\n      1.000000\n      1.000000\n
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41.070000\n      ...\n      1.000000\n      1.000000\n      1.000000\n
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5.210000\n      0.044821\n    \n    \n      75%\n      25473.750000\n
1.000000\n      1.000000\n      1.530898e+09\n      10.000000\n
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96.180000\n      ...\n      1.142900\n      1.142900\n      1.000000\n
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8 rows × 112 columns

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False           False  False  False  False       False   \n3         False
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...             ...    ...    ...    ...         ...   \n2833      False
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False           False  False  False  False       False   \n\n
social_timestamp  social_karma  syntax_ari  ...  \\\n0               False
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...   \n2               False         False       False  ...   \n3
False         False       False  ...   \n4               False
False       False  ...   \n...               ...           ...         ...
...   \n2833            False         False       False  ...   \n2834
False         False       False  ...   \n2835            False
False       False  ...   \n2836            False         False       False
...   \n2837            False         False       False  ...   \n\n
lex_dal_min_pleasantness  lex_dal_min_activation  lex_dal_min_imagery
\\\n0                        False                  False
False   \n1                       False                  False
False   \n2                       False                  False
False   \n3                       False                  False
False   \n4                       False                  False
False   \n...                       ...                    ...
...   \n2833                    False                  False
False   \n2834                    False                  False
False   \n2835                    False                  False
False   \n2836                    False                  False
False   \n2837                    False                  False
False   \n\n      lex_dal_avg_activation  lex_dal_avg_imagery
lex_dal_avg_pleasantness  \\\n0                      False
False                     False   \n1                     False
False                     False   \n2                     False
False                     False   \n3                     False
False                     False   \n4                     False
False                     False   \n...                     ...
...                       ...   \n2833                  False
False                     False   \n2834                  False
False                     False   \n2835                  False
False                     False   \n2836                  False
False                     False   \n2837                  False
False                     False   \n\n      social_upvote_ratio
social_num_comments  syntax_fk_grade  sentiment  \n0
False                False            False      False  \n1
False                False            False      False  \n2
False                False            False      False  \n3
False                False            False      False  \n4
False                False            False      False  \n...
...                  ...              ...        ...  \n2833
False                False            False      False  \n2834
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False                False            False      False  \n2836
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False                False            False      False  \n\n[2838 rows x
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social_karma\n      syntax_ari\n      ...\n      lex_dal_min_pleasantness\n
lex_dal_min_activation\n      lex_dal_min_imagery\n
lex_dal_avg_activation\n      lex_dal_avg_imagery\n
lex_dal_avg_pleasantness\n      social_upvote_ratio\n
```

```
social_num_comments\n      syntax_fk_grade\n      sentiment\n    \n  \n  \n
\n      0\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      False\n
...\n      False\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n    \n    \n
1\n      False\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      ...\n
False\n      False\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n    \n    \n      2\n
False\n      False\n      False\n      False\n      False\n      False\n
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False\n      False\n      False\n      False\n      False\n      False\n
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False\n      False\n      False\n      False\n      False\n      False\n
False\n    \n    \n      ...\n      ...\n      ...\n      ...\n      ...\n
...\n      ...\n      ...\n      ...\n      ...\n      ...\n      ...\n
...\n      ...\n      ...\n      ...\n      ...\n      ...\n      ...\n
...\n      ...\n      ...\n    \n    \n      2833\n      False\n
False\n      False\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      ...\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      False\n
False\n      False\n    \n    \n      2834\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      False\n
False\n      False\n      ...\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      False\n
False\n    \n    \n      2835\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      False\n
False\n      ...\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      False\n
\n    \n      2836\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      False\n
...\n      False\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n    \n    \n
2837\n      False\n      False\n      False\n      False\n      False\n
False\n      False\n      False\n      False\n      False\n      ...\n
False\n      False\n      False\n      False\n      False\n      False\n
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2838 rows × 116 columns

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0\nsocial_num_comments         0\nsyntax_fk_grade             0\nsentiment
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(stopwords.words('english'))\n\ndef clean(text):\n    text =
str(text).lower()\n    text = re.sub('\\[.*?\\]',' ',text)\n    text =
```

```
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',text)\n    text = re.sub(' [%s]' %re.escape(string.punctuation),' 
',text)\n    text = re.sub(' \\n',' ',text)\n    text = re.sub(' 
\\w*\\d\\w*' ,' ',text)\n    text = [word for word in text.split(' ') if 
word not in stopword]\n    text = \" \".join(text)\n    text = 
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= np.array(df[\"text\"])\ny = np.array(df[\"label\"])\n\ncv = 
CountVectorizer()\nX = cv.fit_transform(x)\nprint(X)\nxtrain, xtest, 
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