Data Collection and Preprocessing Phase

Date	15 October 2024
Team ID	739823
Project Title	Spooky Author Identification Using Deep Learning.
Maximum Marks	6 Marks

Preprocessing Template

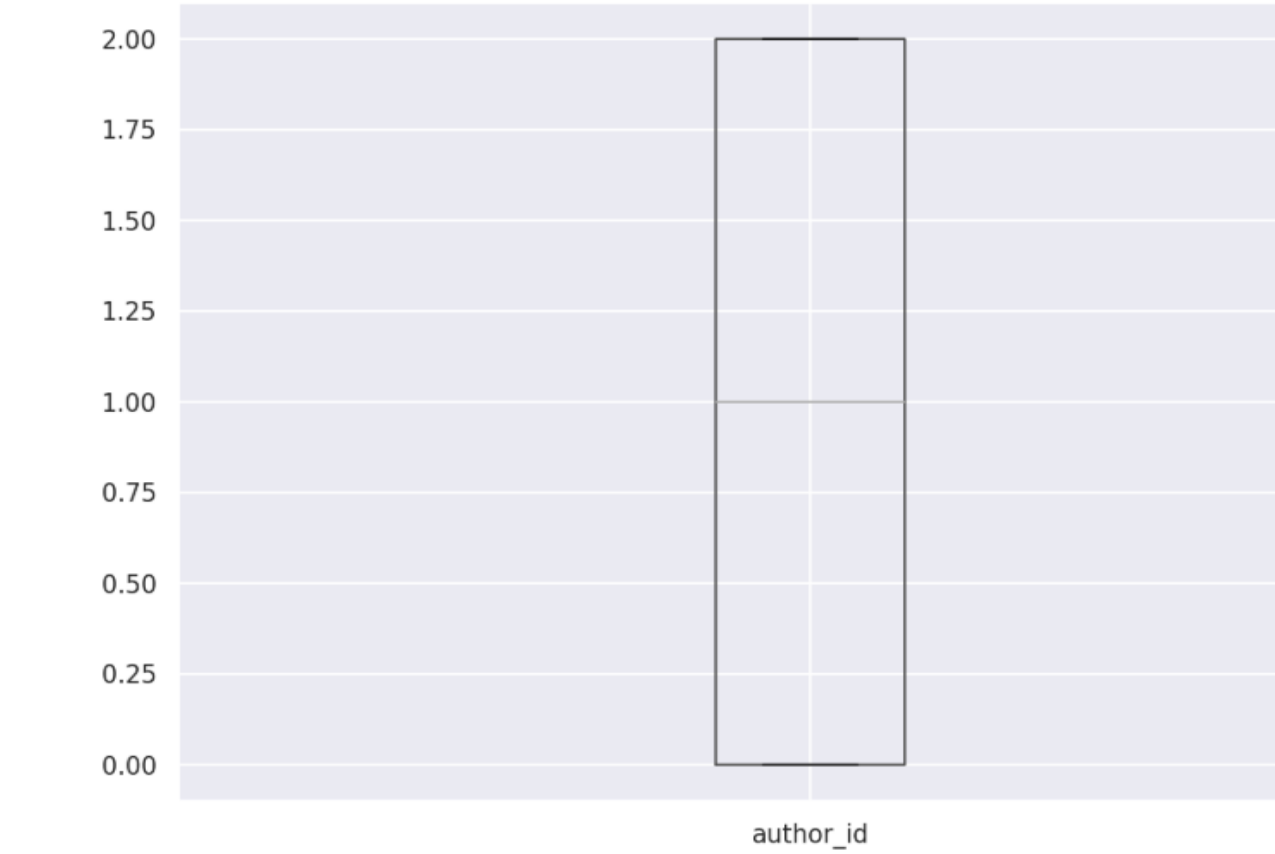
To preprocess data for spooky author identification using deep learning, start by loading and exploring the dataset to understand its structure, class distribution, and any missing or incomplete text entries. Handle missing data by dropping records with missing text, as imputing text may introduce noise. Clean the text by removing punctuation, numbers, special characters, and stop words, and convert it to lowercase for uniformity. Tokenize the text into words or subwords depending on the model. Convert the text into numeric representations using techniques like TF-IDF, Bag-of-Words, or word embeddings (e.g., GloVe, FastText). For advanced models like transformers, utilize pre-trained tokenizers to encode the text directly. Finally, split the preprocessed data into training and testing sets to develop and evaluate the deep learning model effectively.

Section	Description
Data Overview	`data.describe()` |	author_id | | --- | --- | | count | 19579.000000 | | mean | 0.905205 | | std | 0.838595 | | min | 0.000000 | | 25% | 0.000000 | | 50% | 1.000000 | | 75% | 2.000000 | | max | 2.000000 |

Boxplot

```
plt.figure(figsize=(10, 6))
data.boxplot ()
```

```
<Axes: >
```

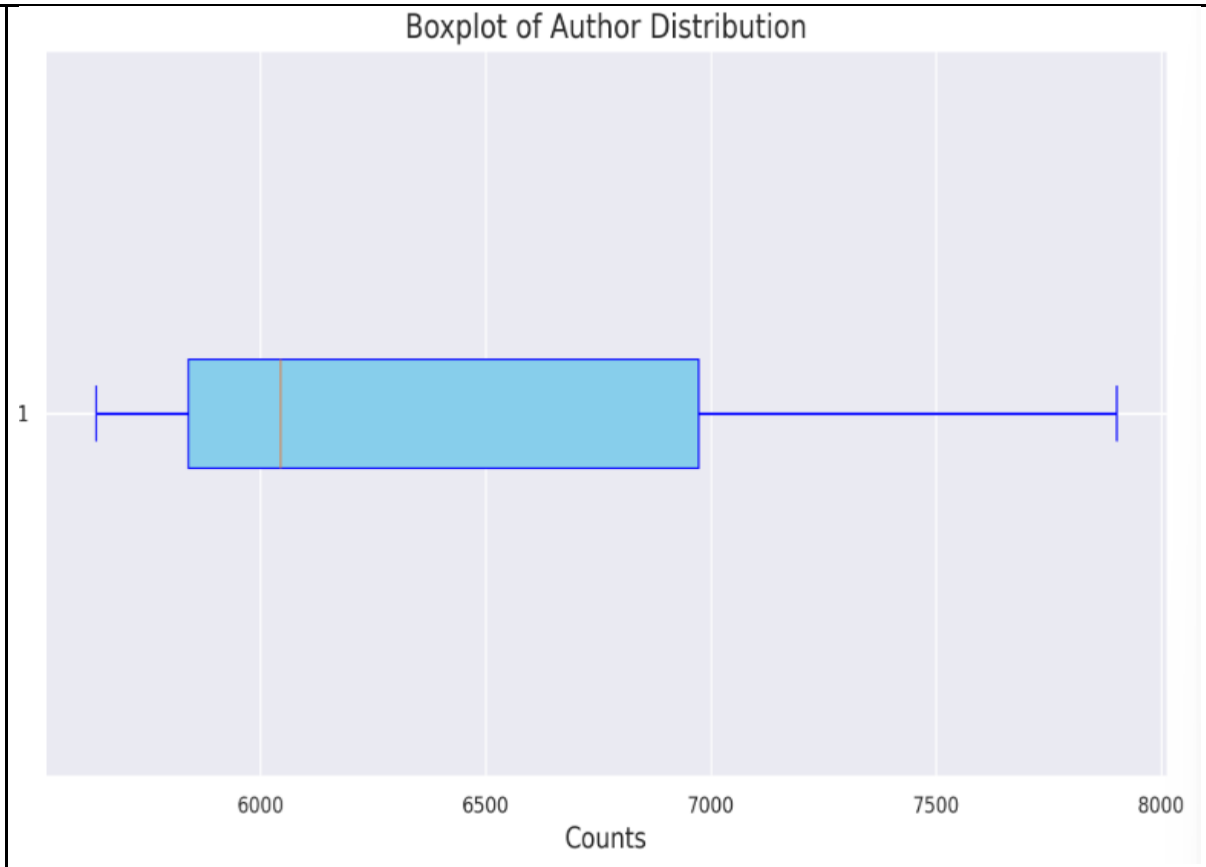


Outliers	``` # Display the DataFrame with the new column print(data) import matplotlib.pyplot as plt # Get value counts for 'author' column data = train_df['author'].value_counts() # Create a boxplot for the distribution of counts (the values of 'data') plt.figure(figsize=(10, 6)) # Boxplot of the counts of authors plt.boxplot(data, vert=False, patch_artist=True, boxprops=dict(facecolor='skyblue', color='blue'), whiskerprops=dict(color='blue'), capprops=dict(color='blue'), flierprops=dict(markerfacecolor='red', marker='o', markersize=8)) # Add titles and labels plt.title('Boxplot of Author Distribution', fontsize=16) plt.xlabel('Counts', fontsize=14) # Show the plot plt.tight_layout() plt.show() ```

```
          id                                               text  \
0      id26305  This process, however, afforded me no means of...
1      id17569  It never once occurred to me that the fumbling...
2      id11008  In his left hand was a gold snuff box, from wh...
3      id27763  How lovely is spring As we looked from Windsor...
4      id12958  Finding nothing else, not even gold, the Super...
...        ...                                                ...
19574  id17718  I could have fancied, while I looked at it, th...
19575  id08973  The lids clenched themselves together as if in...
19576  id05267  Mais il faut agir that is to say, a Frenchman ...
19577  id17513  For an item of news like this, it strikes us i...
19578  id00393  He laid a gnarled claw on my shoulder, and it ...

                                                 text_id
0      [26, 2945, 143, 1372, 22, 36, 294, 2, 7451, 1,...
1      [11, 89, 125, 723, 4, 22, 9, 1, 5924, 79, 28, ...
2      [7, 15, 144, 173, 8, 5, 714, 4929, 560, 23, 18...
3      [121, 595, 25, 779, 16, 34, 212, 23, 696, 4246...
4      [1126, 166, 680, 20, 76, 714, 1, 4930, 1794, 1...
...                                                   ...
19574  [6, 46, 31, 1130, 102, 6, 212, 21, 11, 9, 54, ...
19575     [1, 2616, 7330, 365, 396, 16, 62, 7, 5, 7596]
19576  [10440, 6083, 15918, 25943, 9, 25, 4, 128, 5, ...
19577  [17, 37, 4653, 2, 2703, 82, 26, 11, 9643, 84, ...
19578  [13, 1354, 5, 6664, 6557, 27, 10, 1670, 3, 11,...

[19579 rows x 3 columns]
```


Boxplot of Author Distribution
1
6000
6500
7000
7500
8000
Counts

Data Preprocessing Code Screenshots

Loading Data

```
train_df=pd.read_csv('/content/train.csv')
train_df.head()
```

	id	text	author
0	id26305	This process, however, afforded me no means of...	EAP
1	id17569	It never once occurred to me that the fumbling...	HPL
2	id11008	In his left hand was a gold snuff box, from wh...	EAP
3	id27763	How lovely is spring As we looked from Windsor...	MWS
4	id12958	Finding nothing else, not even gold, the Super...	HPL

```
data.head()
```

	id	text	author	text_id	author_id
0	id26305	This process, however, afforded me no means of...	EAP	[26, 2945, 143, 1372, 22, 36, 294, 2, 7451, 1,...	0
1	id17569	It never once occurred to me that the fumbling...	HPL	[11, 89, 125, 723, 4, 22, 9, 1, 5924, 79, 28, ...	1
2	id11008	In his left hand was a gold snuff box, from wh...	EAP	[7, 15, 144, 173, 8, 5, 714, 4929, 560, 23, 18...	0
3	id27763	How lovely is spring As we looked from Windsor...	MWS	[121, 595, 25, 779, 16, 34, 212, 23, 696, 4246...	2
4	id12958	Finding nothing else, not even gold, the Super...	HPL	[1126, 166, 680, 20, 76, 714, 1, 4930, 1794, 1...	1

```
data.tail()
```

	id	text	author	text_id	author_id
19574	id17718	I could have fancied, while I looked at it, th...	EAP	[6, 46, 31, 1130, 102, 6, 212, 21, 11, 9, 54, ...	0
19575	id08973	The lids clenched themselves together as if in...	EAP	[1, 2616, 7330, 365, 396, 16, 62, 7, 5, 7596]	0
19576	id05267	Mais il faut agir that is to say, a Frenchman ...	EAP	[10440, 6083, 15918, 25943, 9, 25, 4, 128, 5, ...	0
19577	id17513	For an item of news like this, it strikes us i...	EAP	[17, 37, 4653, 2, 2703, 82, 26, 11, 9643, 84, ...	0
19578	id00393	He laid a gnarled claw on my shoulder, and it ...	HPL	[13, 1354, 5, 6664, 6557, 27, 10, 1670, 3, 11,...	1

```
test_df=pd.read_csv('/content/test.csv')
test_df.head()
```

	id	text
0	id02310	Still, as I urged our leaving Ireland with suc...
1	id24541	If a fire wanted fanning, it could readily be ...
2	id00134	And when they had broken down the frail door t...
3	id27757	While I was thinking how I should possibly man...
4	id04081	I am not sure to what limit his knowledge may ...

Checking Missing Values

```
data.isnull()
```

	id	text	author	text_id	author_id
0	False	False	False	False	False
1	False	False	False	False	False
2	False	False	False	False	False
3	False	False	False	False	False
4	False	False	False	False	False
...	...	...	...	...	...
19574	False	False	False	False	False
19575	False	False	False	False	False
19576	False	False	False	False	False
19577	False	False	False	False	False
19578	False	False	False	False	False

19579 rows × 5 columns

```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 19579 entries, 0 to 19578
Data columns (total 5 columns):
 #   Column     Non-Null Count  Dtype 
---  ------     --------------  ----- 
 0   id         19579 non-null  object
 1   text       19579 non-null  object
 2   author     19579 non-null  object
 3   text_id    19579 non-null  object
 4   author_id  19579 non-null  int64 
dtypes: int64(1), object(4)
memory usage: 764.9+ KB
```

```
y_pred
```

```
array([[0.32830974, 0.42775834, 0.24393189],
       [0.32830974, 0.42775834, 0.24393189],
       [0.32830974, 0.42775834, 0.24393189],
       ...,
       [0.32830974, 0.42775834, 0.24393189],
       [0.32830974, 0.42775834, 0.24393186],
       [0.32830974, 0.42775834, 0.24393186]], dtype=float32)
```

Save Processed Data

```
import pickle
import joblib
joblib.dump(train_df, 'train_df.pkl')
joblib.dump(test_df, 'test_df.pkl')
joblib.dump(data, 'data.pkl')
```

```
['data.pkl']
```