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FAKE NEWS DETECTION USING ARTIFICIAL INTELLIGENCE

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ABSTRACT

The main objective of this project is to detect fake news by collecting news from different articles. However, manually determining the veracity of news is a challenging task, usually requiring annotators with domain expertise who perform a careful analysis of claims and additional evidence, context, and reports from authoritative sources. The main aspects of fake news detection are characterization and detection. With using the help of machine learning algorithms such as Sentiment analysis, a classifier can be created.

Key words : Classifier, Fake news detection, machine learning, Sentiment Analysis.

1.INTRODUCTION

In this conference paper, we are going to discuss the automatic detection of fake news using machine learning algorithms. Fake news can be defined as a news that is false, mainly spread on the internet to deceive readers. Sometimes the reader might look for authentic news on its own, but it can consume a considerable amount of time. So, for the same purpose, we developed an automatic fake news detection algorithm using machine learning with the help of Sentiment analysis. This algorithm provides the reader with true and authentic news only, i.e. it tells the reader whether the statement is true or not. This is done by comparing the given news with similar keywords and statements stored in the database already. Hence, we get the output with the percentage of truthfulness.

2.LITERATURE REVIEW

(i). Supervised Learning For Fake News Detection

Most of the fresh work has focused on understanding and detecting fake news which is spread on social media. For achieving this goal, several types of features are extracted from the news, it includes several sources and posts from social media. With respect to the main features proposed in the literature for fake news detection, a new set of features is introduced which measures the prediction performance of current form and features for automatic detection of fake news.Our output discloses the fact that how important and useful it is to explore new features for the detection of fake news. Finally, we discuss how fake news detection approaches can be used in the practice, highlighting challenges and opportunities.[1]

(ii). Automatic deception detection: Methods for finding fake news:

In this paper, we have provided with different types of methods which can tell you about the truthfulness of a news, derived from two major categories – linguistic cue approaches (with machine learning), and network analysis approaches. This new hybrid fashion of combining both linguistic cue and machine learning with network based behavioral data has proven very promising. Since, creating a fake news detection system is a tough task, we have successfully introduced operational guidelines for designing a fake news detection system.[2]

(iii). Detecting fake news for reducing misinformation risks using analytics approaches.

In this paper a novel text analytics-driven approach that can be used for detecting fake news is explained. We initially depict the system for the proposed approach and the basic diagnostic model including the usage subtleties and approval dependent on a corpus of news information.

We gather genuine and counterfeit news, which is changed from an archive based corpus into a point and occasion based portrayal. Fake news detection is performed using a two-layered approach, which consists of detecting fake topics and fake events. The efficacy of the proposed approach is demonstrated through the implementation and validation of a novel FakE News Detection (FEND) system. [5]

(iv). Information Credibility on Twitter.

In this paper, we focus on automatic methods for assessing the credibility of a given set of tweets. We classify the microblog posts on the basis of "trending" topics and mark them as credible or not credible, based on their

characteristics. The tweeting and retweeting behaviour is studied to extract more features.[3] [4]

3.BASIC CONCEPTS

Fake news detection makes use of various features that are associated with a sentence, source reliability, source history, etc. All these features are considered while deciding the accuracy of news.Basically, we can categorize fake news detection features into different types. Such as:

1. Features of the content given with the news.
2. Features drawn out from the source of the news.

The main features of the fake news detection system are:

(i). Textual Features

Textual features are details that are carved out from the news, including the body of the news, headline, and any message used by the source in text form. Some image processing techniques are also performed if the news is attached to any kind of image or video.

(ii). Language Features

In this feature, we check for any kind of violation of the syntax of the English language. Features like bag-of-words, parts-of-speech(POS), etc. are explored here for any kind of error. Here the writer's style is taken into consideration as it is an indicator of fine text. So, features based on text reliability are also implemented.

(iii). Lexical Features

Lexical features give us the amount and clarity of unique words and the frequency in which they are used in the news text. Features like first-person pronouns, demonstrative pronouns, verbs, hashtags, number of words, all punctuations, countings, etc. are evaluated and categorized as lexical features

(iv). Semantic Features

Here the semantic features of the text content are evaluated on the basis of the toxicity score obtained by google's API. Machine learning techniques are used by the API to determine up to what extent a text can be labeled as "toxic" or simply harmful.

A. Fake News

There are various ways to describe what's fake news. Fake news is a news which consists of disinformation or deluded information either used deliberately or due to the lack of information sources. Either way, it is a barrier to the development of our society. Fake news can mislead people to a different path in a way so that they cause damage to society.

B. Fake News Detection

To avoid the damage caused by fake news, we developed an automatic fake news detection application. By using this application we can easily differentiate between fake news and authentic news. This task is done with the help of machine learning algorithms. Also, we use Sentiment analysis to obtain good accuracy.

Sentiment analysis is the process of detecting the accuracy of a piece of sentence i.e. whether it is true or false. This is done by understanding the statement i.e. if the statement is negative or positive. We understand the statement using the words, punctuations, etc used in it. The given statement is eventually compared with some relative statements stored in the database already. For receding complexity, the output is generalized into either True or False. Also, it provides us with the accuracy of the truthfulness of the given news.

(i). Supervised Learning

It is one of the fundamental tasks to be performed in this entire process. This is a machine learning technique that uses both input and output in order to obtain the necessary methods to reach that certain output. For this, a large amount of data, which comprises both true and false data, has been taken as a data set. 70% of this data is used as training data, to train the data to yield the corresponding results. The remaining 30% is used to validate the system. This learning also helps in future validations and modifications. The accuracy increases with the amount of data used to train the system.

(ii). Sentiment Analysis

Sentiment Analysis is the use of various advanced

technology to extricate, quantity, and systematically point out the influential states and intuitive information. Natural language processing (NLP), computational linguistics, Biometrics, and text analysis are various technologies that are used in Sentiment analysis. Simply Sentiment analysis can be explained as a method of determining the attitude or feeling of the author by analyzing various words and phrases that he/she had used in the sentence and thereby determining the credibility of the sentence.

4.ARCHITECTURAL MODEL

Spreading of phony news is a worldwide situation that is unavoidable at the social level among people, and furthermore through web based life. The mission of distinguishing counterfeit news has tried an enormous assortment of names, from deception to gossipy tidbits and afterward to spam.

There has been a monstrous assortment of work encompassing content examination of phony news and

comparative subjects, for example, gossipy tidbits or spam. We have dissected various articles and reports. Using these data, we have built a model that gets trained using this data and tries to predict whether the news is fake or not based on new out-of-sample data.

The dataset of Figure 1 contains the sample data that is used in supervised learning. One of the most important features of using machine learning is that the system learns each time it is being used. Thus the accuracy increases by the increase of usage of the system.

The database is used to store the collected data. By data we mean the authentic news obtained from different sources like news channels, newspapers, various online platforms, etc. This database can be further extended by adding up more authentic news. This data is compared with the input data to check the authenticity of the news.

For the analysis of data [Figure 1], we use Sentiment Analysis. It is the procedure of computationally recognizing and classifying assessments communicated in a bit of content, particularly so as to decide if the author's mentality towards a specific point, item,etc. is positive, negative or nonpartisan. Most of the time, the honesty of specific surveys or content can be anticipated by inspecting the comments and comparable articles. On the off chance that most comparative articles are not in accordance with the news, all things considered, the news may be one-sided or counterfeit. Similarly, the comments on the article can be used to evaluate whether the facts in the article are reliable. We use a web application or a website to display our output. It is easily accessible and user friendly. The complexity level is negligible since the output is either false or true. We can further modify our application to the mobile level or we can even use a plugin.
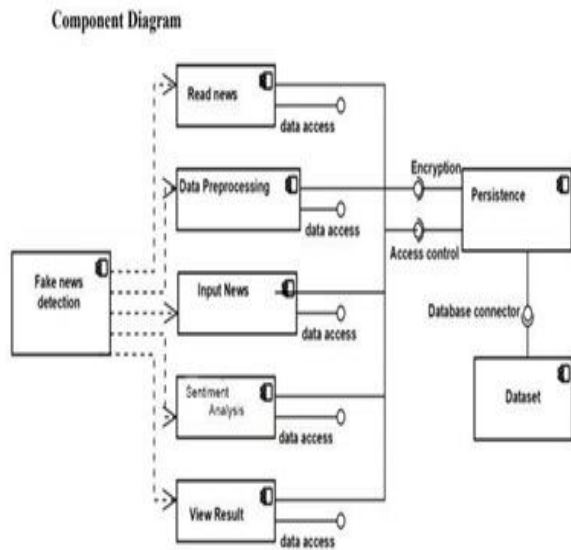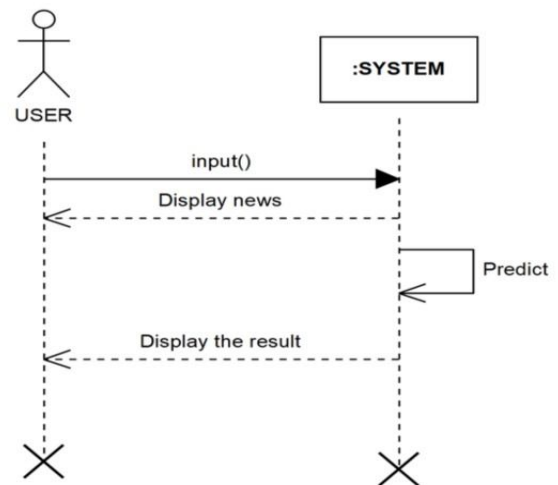

Figure 1: Component Diagram

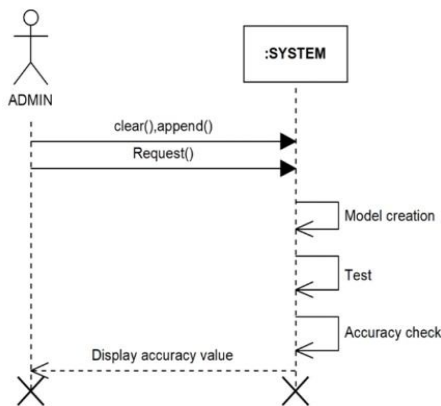**Figure 2:** Admin use case diagram

Figure 3: User use case diagram

The working of the website based user-admin interaction is shown in Figure 2 and Figure 3. The user- website interaction is the simplest in the form. The goal is to create a simpler UI so that each user can easily navigate through the website as well as perform the task. The user can give the input data, which in this case is the 'news' that needs to be identified as fake or not. Once the user proceeds, the process is executed, and the final result is shown on the website screen; the credibility of the 'news'.

The user is unaware of the actions performed by the system in the background to reach the desired output. The admin, as described in Figure 2, has more privilege than the common user. Admin has direct access to the dataset used by the machine learning program. With the situation arises, the admin can add/remove the data in the dataset to yield more accurate results. The admin can check the accuracy of data using Sentiment analysis. This gives a more upper hand in increasing the accuracy of the result produced.

Thus, the admin can manually check the automatic working of the machine learning algorithm. Moreover, the implementation of fake news detection can be done in different ways such as android application, website plugin, as per the compatibility of the user.

5.CONCLUSION

The pandemic and natural disasters have been rising rapidly, as the situation tenses the spreading of fake news also increases tragically. This spread of fake news ultimately affects the whole society. Thus, finding deceptive and fake news is essential to our daily lives.

In this project our objective is to build a classifier that can predict whether a piece of news is fake or not based only on its content, thereby approaching the problem from a purely deep learning technique. We have analyzed different articles. Using this data, we have built a model that gets trained using this data and tries to predict whether the news is fake or not based on new out-of-sample data. For better accessibility, the entire procedure is built as a website, enabling an easy UI for better execution and simplicity of the operation.

ACKNOWLEDGEMENT

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