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METHOD FOR DETECTING FAKE NEWS BASED ON NATURAL LANGUAGE PROCESSING

The paper considers the method for detecting fake news based on Natural Language Processing (NLP) technology. NLP technology is used to divide text into tokens and parsing it. To compare similarity tokens, Levenstein's algorithm is used, as well as the coefficient of semantic similarity of words and phrases TF-IDF.

Keywords: Natural Language Processing technology, fake, manipulation, text analysis, Levenshtein distance.

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Topic relevance. The use of various news web resources on the Internet and social networks to disseminate information is becoming increasingly popular. Gaining some readership and gaining their trust, such sources begin to spread fake news or manipulation. Therefore, the idea of protecting the population from misinformation and the spread of manipulative influence during the war is extremely acute and necessary today.

The use of modern technology is a necessary factor in combating the spread of fake data. Moreover, the main task is to quickly automatically analyze the information, as well as the dissemination of refutations and true facts. Therefore, the development of new algorithms for searching and analyzing the flow of news is an extremely important task.

Target setting. An important part of implementing any software is its efficiency and speed. The spread of fake information can be observed daily, but there is almost no automatic verification of information. All news checks are performed exclusively by journalists or automated systems, which have extremely limited and insufficiently fast functionality. Therefore, a method is proposed to increase the efficiency of news validation through the use of NLP together with Levenstein's algorithm.

Actual scientific research and issues analysis. Currently, a significant number of problems in the fields of IT, medicine, economics, criminology and others that can be solved by speech recognition technology have been studied and described. However, the main part of the publications is aimed at applying the analysis of natural speech to various professional fields. There are works that describe the use of NLP to analyze moods, track and control public opinion, search for texts on a particular topic and highlight keywords, search engine analysis, the use of chatbots.

Uninvestigated parts of general matters defining. Today, the issue of effective analysis of information, including news, by automatic solutions is acute.

However, the use of NLP technology to effectively process and extract fake news remains unexplored.

Task setting. The aim of the study is to develop an effective system for the detection, synthesis and analysis of news through the use of Natural Language Processing technology.

The statement of basic materials. In the offered paper the mechanism of recognition of fake news on the basis of Natural Language Processing technology is considered. For the work of which it is necessary to perform the following stages of implementation.

At the beginning, information is collected and a dataset is formed. For this purpose, the European Union database is used, which contains a list of references to verified sources and facts, as well as confirmed or refuted news. To optimize the dataset, the collected data is cleaned of duplicates. After all, when parsing different sources, there are cases of checking the same news several times, which increases the requirements for memory and significantly slows down the system.

NLP technology is used for text analysis, which forms a complete meaningful picture of the text. The title and text of the article are analyzed separately. The title is a list of semantic tokens based on all words. Lists of semantic and key tokens are formed separately for the text. Moreover, tokens that do not have a semantic load are removed during the formation of the semantic parsing tree.

After forming a list of tokens from the text and title, a search is made for verified or refuted facts in the database using Levenstein's algorithm.

The formation of a sample of facts is as follows:

1) filtering facts according to header tokens: the preparatory sample includes facts whose similarity of header tokens is greater than 75% according to Levenstein's distance;

2) division of facts into similar and opposite: there is a comparison of text tokens. If the token similarity is greater than 50%, the fact is marked as similar. Otherwise - as refuted.

The result of the performed actions is a list of true and refuted fakes, sorted by decreasing relevance to the given list of tokens.

Next is the analysis of the results, 4 possible scenarios are considered:

1) the difference between Levenstein's distance between the incoming news and the truthful articles recorded in the database is less than 10%. In this case, the incoming news is marked as "true" and recorded in the database;

2) the difference between Levenstein's distance between the incoming news and the fake articles stored in the database is less than 10%. In this case, the incoming news is marked as a "fake" and recorded in the database;

3) the difference between Levenstein's distance between the incoming news and the truthful articles recorded in the database is more than 90%. In this case, the incoming news is marked as a "fake" and recorded in the database;

4) the difference between Levenstein's distance between the incoming news and the fake articles recorded in the database is more than 90%. In this case, the incoming news is marked as "true" and recorded in the database;

In all other cases, the fact is sent for manual verification. That is, fact-check journalists conduct additional research to verify the news. And then write it to the database as a true fact or as a fake with the required fields "refutation" and "refutation link". It is also allowed to record fake news with certain designations as "manipulation" or "partial truth", or "source - a victim of misinformation". The last concept is when a person or a news resource places fake information on their page without suspecting that it is not true.

Experiments. To test the proposed method, news was created from groups of sputniknews sites for the period from 1.02.2020 to 29.02.2020. We see repeated data about this, which were published on the website euvsdisinfo.eu. After completing the database of verified fakes, 7,837 records were recorded, and 500 news items were recorded on the southfront.org website. The results showed new ones that 79 of them turned out to be fake, 45 - placed on additional manual treatments. In fact a newer attempt has not been found, visit that known or needed well-known journalistic research. After analyzing all the news of journalistic methods, it turned out to be as follows: fakes - 95, though - 405 [1]. Thus, the program was able to properly expand 83% of fakes. Given that the task of modernizing fakes predominates in the luminaire, it is possible to achieve a possible positioning and that confirms expectations.

Conclusions. The proposed article describes how to recognize fake news on the Internet. The method differs from others by using NLP technology and Levenstein's algorithm. To analyze the proposed method, the database is filled with verified news from the site euvsdisinfo.eu. To test this method, a group of sputnicnews sites was chosen, which usually distribute fake news.

The method that processed a sample of 500 news items was tested. Test results compared to the results of the journalistic database of fake news. The method correctly recognized 83% of falsified facts. Moreover, it took from 1.7 s to 57 s to process one article. At a time when fact-checkers with existing options for automatic processing spend to check one article from three hours to several days, which shows a significant difference in the speed of obtaining results. In addition, the relevance of the news lasts no more than one - two days. That is, sometimes the results of a journalistic investigation come later than the news enters the archival data.

Thus, we can assume that the goal - to increase the efficiency of the system of detection, synthesis and analysis of fake news through the use of Natural Language

Processing technology - has been achieved. The proposed method of realization of the set task proved to be effective for recognizing fake news with rather high accuracy and turned out to be much faster than the existing solutions. This method can be improved by recognizing the true news, using a trained neural network to identify the most common fakes.

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