A Study on Detection of Fake News

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Abstract- *Social media for news consumption is a double-edged sword. On the one hand, its low cost, easy access, and rapid dissemination of information lead people to seek out and consume news from social media. On the other hand, it enables the wide spread of fake news, i.e., low quality news with intentionally false information. The extensive spread of fake news has the potential for extremely negative impacts on individuals and society. Therefore, fake news detection on social media has recently become an emerging research that is attracting tremendous attention. Fake news detection on social media presents unique characteristics and challenges that make existing detection algorithms from traditional news media ineffective or not applicable. Since the issue of fake news detection on social media is both challenging and relevant, a study on simple model using Naïve Bayes Classifier is done in this paper.*

Keywords- Fake news, Fake news detection, social media, Naïve Bayes classifier.

I. INTRODUCTION

Internet and social media makes the access to fetch the news much easily and comfortably. Often the users can follow their interest in online and spread of the mobile gadgets makes this process even more easier. But we all know with great possibilities bring out great challenges. Mass media causes huge influence on the society as there is always someone who waits to take advantage of this fact. Sometimes to achieve goals mass-media may manipulate the data in different ways. This leads in the production of the news articles that are not completely true or completely false. There exist lot many of websites that try to produce fake news almost exclusively. They wantedly publish fake contents like hoaxes, propagandas – they often try to use social media to drive web traffic and amplify their effect. The main goal of such fake news sites is to affect the public by manipulating their opinion on certain matters (mostly political). Examples of such website may be found in Ukraine, United States of America, Germany, China and lots of other countries. Thus, fake news is a global issue or we can call it as a global challenge.

Fake news propaganda goes back to 19th century when a newspaper made a claim that aliens are present on the moon. This methodology of trying to influence people and direct them towards such a false agenda is being carried out since long back. The Nazi group also used such kind of techniques to make the people believe in these methods and support those methods. Back in those days two newspapers competed themselves to gain more attention and become famous so they started spreading rumors instead of the true facts. They wanted to gain trust from as much public as they can, later when public found out that they were spreading rumors instead of real news, then their practice was termed as "yellow journalism". Gradually the methods involved in the concept of faking news content changed, earlier only the newspapers were the one who indulged in such activities like spreading rumors, but as time passed by the rumors were put into the ears of the public by the people who had some hidden agendas, like religious or political.

Now mainly the people who want the public to turn in their favor provided fake news to the journal companies and even the source of such fake news was sometimes altered in order to benefit for their own practices, for example some videos made by the government to make people aware of the wrong doings out there in the society were projected to audience in such a way that, it was believed to be happening on regular basis and that appeared to be an actual footage of the crime that happened. Eventually the newspapers were distinguished, and people started reacting towards them. This started the beginning of social media analysis and fake news detection. The term known as "yellow journalism" was one such example where the common people detected that the news being displayed to them was fake and protested against it. Every individual has the right to get authentic news as most of our reactions and behaviors towards the society are based on the recent on goings in our surroundings and if people are made to absorb such false news then it will affect their judgement. People started to work in the field of fake news detection with the analysis of social platforms in recent years and have also developed certain models but the accuracy is not yet at par. The process is very complex and lengthy.

The access of internet to crowd made the social media platform easily available for everyone, therefore people with lesser knowledge of their usage also entered into the field and started presenting their views, the people with some agenda and political desires took advantage of the opportunity

and brainwashed such people to do their work at lower level, social media gave them the power of being anonymous and spread their beliefs to the masses, which led to common public getting affected, but was it the first time all of this happened.The answer to that question is "NO" back in 19th century people have witnessed cases of spreading rumors through journalism, but at that time it was not affecting such huge public because of the lack of accessibility. Also, people that time did not have so democratic culture among themselves that they felt the need to perform such acts, the reign of dictatorship was still prevalent and dictators had things done in their way, with or without public's consent. The introduction of democracy gave the need of bring all the subjects into one single voice to fulfil your agendas, thus the methods of deceiving them also became popular. When they gave speeches and praised themselves by flaunting their fake achievements, the public soon realized that all this was just a hoax and in reality, they had done nothing for the betterment of the society as they claim. But then people relied on news to clear the difference between truth and rumors. Here the desire to adulterate the news developed and every powerful person got into the generation of fake news through anonymous sources which gave them an upper hand over their opposition. With access to social media platforms they were able to keep their anonymity and spread rumors stating that it was from a trusted source, people without doing much research into the origin of the content they are reading tend to believe just what they read, hence the practice of winning people from their social media became popular.

Eventually this fraud was noticed and concepts of social media analysis were developed, many organizations got into the depth of tactics and devised a plan to prevent such treachery, and with technology like machine learning and artificial intelligence this dream turned into reality, now the technology is present where one can give the sample data set to the tool and use that trend to train the model, which will decide what to look for when analyzing the content on social media in real time. This will make the users aware about the authenticity of the content they are reading and will ensure that all the fake and adulterated content in removed from their sight.

Many scientists believe that this issue may be addressed by help of machine learning techniques and artificial intelligence. There is a reason for that: most of the artificial intelligence algorithms have shown that they work much better on lots of classification problems (image recognition, voice detection and so on) because hardware required is cheaper and many times bigger datasets are available. This research describes a simple fake news detection method based on one of the artificial intelligence

algorithms – naïve Bayes classifier. The goal of the research is to examine how this particular method works for this particular problem given a manually labelled news dataset and to support (or not) the idea of using artificial intelligence for fake news detection.

II. A LITERATURE SURVEY

After a thorough search and evaluation of the available literature in fake news detection various approaches was followed in the work which are listed below.

The work "Fake News Detection Using Naïve Based Classifiers" was referred for studying approach used, it was found that already some work had been done on naïve based approach and it turned out that it was the most simple approach available and the accuracy achieved by it was also satisfactory. This approach was implemented as a software system and tested against a data set of Facebook news posts. The paper describes the difference between spam and fake news, it clearly explains key points about distinguishing between those two and then elaborates on the use of naïve based classifiers for spam filtering. The mathematical implementation is described and details are given on the result achieved.

A Research work "Fake news detection using a Deep Neural Network" gave the concept of usage of neural networks in the field of fake news detection, the use of natural language processing, machine learning and deep learning were focused in this article. It explored models like Naïve Bayes Classifiers , K Nearest Neighbors, Decision tree, Random forest and Deep Learning networks like Shallow Convolutional Neural Networks (CNN), Long Short-Term Memory Network (LSTM).The use of supercomputer was needed in order to compute the result. Different approaches were tested in this paper and results were compared to finalize the type of approach they followed, the accuracy was found out to be lower than that of the naïve based classifiers, but on handling of large datasets naïve based turned out to be ineffective, on the other hand the usage of supercomputer made the researchers open to any amount of data. The implementation consisted mainly of python for natural language processing and a good gpu was used to train the model for machine learning and deep learning concepts. Different classification techniques were analyzed and compared, and the conclusion consisted of the results of implementation all the mentioned approaches.

The paper entitled "Fake News Detection" consisted of the approaches that we have already mentioned except for web scraping. This paper researched the data and displayed

the graphical representation of the problem for fake news that the current world is going through. The use of naïve based classifiers was mentioned along with the technique of web scraping, this technique involved extracting of huge amount of data from the websites, it dealt with the tedious task of copy pasting the data from the websites, as the data was automatically stored into the local drive after being copied from the social media. The implementation details were provided along with the achieved results, towards the end the ways of improving their model was also described.

The paper entitled "Fake News Detection Using Machine Learning approaches: A systematic Review" reviews various Machine learning approaches in detection of fake and fabricated news. The algorithms used on data sets were Naïve Bayes, Decision trees, SVM, Neural Networks, Random Forest. The results show 15 percent fake tweets, 45 % real tweets , rest posts where undecided.

III. CONCLUSION

A fake news detection is very important area of research since fake news is interfere with useful information from the news through social media especially if the data is critical for decision making. In this paper a study on fake detection using various machine learning approaches like decision tree, Navie Bayes classifier, etc is done. In future various other approaches can be done to improve the accuracy.

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