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DEEP FAKE IMAGES AND VIDEOS DETECTION USING DEEP LEARNING

[1]K KARTHIK REDDY, [2] T MANIDEEP REDDY, [3] K KIRAN, [4]Y SAI KIRAN, [5] MR.UPPENDER,
[1,2,3,4] U.G.Scholor, Department of ECE, Sri Indu College Of Engineering & Technology, Ibrahimpatnam, Hyderabad.
[5] Professor, Department of ECE, Sri Indu College Of Engineering & Technology, Ibrahimpatnam, Hyderabad.

ABSTRACT

In order to improve Twitter's ability to identify false news, we will compare the performance of Deep Neural Networks with that of the Innovative K Nearest Neighbor approach. Things Utilized: Using a hybrid approach that divided the training and testing phases, we combined state-of-the-art K-Nearest Neighbor algorithm with deep neural networks to detect Face book fake news. In about 80% of the instances when the Gpower test is carried out, the parameters α=0.05 & beta=0.2 are used. Innovative K Nearest Neighbor Algorithm achieved higher item recognition (81.55%) and measured accuracy (79.24%) than Deep Neural Networks ($p < 0.05$), with a significance value of 0.007. 79.54%). A more accurate algorithm than Deep Neural Networks is the Innovative K Nearest Neighbor method, according to the conclusion.

Subjects: Research, Social Media, Machine Learning, Deep Neural Networks, Classification, and Innovative K Nearest Neighbor Algorithm.

INTRODUCTION

Traditional and social media outlets are plagued by fake news, which presents inaccurate or fraudulent information as genuine news. Misleading readers or viewers for financial, political, or other reasons is often the main goal of false news. Some examples of what is often referred to as "fake news" include headlines that are intentionally deceptive, images or videos that have been changed, and whole fictional stories. Due to its role in spreading disinformation, erosion of faith in news outlets and government agencies, and polarization of public opinion, false news has the potential to harm people, communities, and democracies alike. Researchers want to know how adept social media users are at recognizing click bait and falsehoods [1]. Such a study may be useful for developing information campaigns, tools for detecting and preventing such material, and machine learning models for classifying fake news[2, 3]. Maintaining trust in news sources, safeguarding personal and business reputations, and spotting misleading information all depend on being able to distinguish fake news from real [5].

On average, 123 research articles about Face book's false news classification have appeared in IEEE Xplore, while 41 articles in sciencedirect have covered the same topic. The purpose of this research is to provide a comprehensive overview of the current methods for identifying false news items using Machine Learning (ML) models, such as the Innovative K Nearest Neighbor Algorithm (KNN) and Deep Neural Networks. Clickbait headlines and fake news articles published on Facebook in Bulgaria were the subjects of this investigation [7]. We choose the KNN method for machine learning. A method for detecting "fake news" and its potential implementation on Facebook are presented in this paper. Facebook uses a cutting-edge K Nearest Neighbor Algorithm classification

model to decide if a post is legitimate or not.

Due to its poor accuracy in identifying false news, the existing system has a research gap. To fill this need, this research looks at how well Deep Neural Networks and the Innovative K Nearest Neighbor Algorithm operate together. Improving Facebook's ability to identify false news is the goal of the suggested approach.

MATERIALS AND METHODS

Two controllers were compared in a study by the Soft Computing Lab at Saveetha School of Engineering [SIMATS]. Ten sample sets were divided into two groups. For each group, a sample size of 21 was calculated using software with GPower 80%, a significance threshold (α) of 0.05, and beta=0.2. Using technical analysis tools, the project required building deep neural networks and the innovative K-nearest neighbor algorithm [8].

Windows 10 OS served as the platform for evaluating deep learning in the study, which was conducted utilizing Python OpenCV software [2]. To ensure precise findings, the dataset was used for code execution. For the purpose of testing the algorithms, the WELFake_Dataset was selected[10]. This dataset contains fictitious news stories. The accuracy of the comparison method and the suggested Innovative K Nearest Neighbor algorithm were assessed using this dataset.

A Novel K-Nearest Neighbor Methodology

By tallying up the preferences of its K nearest neighbors in the training dataset, the Innovative K Nearest Neighbor (KNN) method assigns new data items to preexisting categories [11]. One way to do it is to find out how far away all the training examples are from the query instance. Then, choose the K ones that are closest, and use their regression or classification scores to get the average or class label.

Computer program

First, the data that makes up the instances' characteristics and categories is loaded.
Second Step: A critical component in the prediction accuracy is the number of closest neighbors (k) that should be employed for generating predictions. Step 2 entails this determination.
Third, the technique uses a distance metric, such the Euclidean distance, to determine how far apart all of the dataset instances are from one another.
Fourth, as the closest neighbors, we choose the k examples in the dataset that are geographically closest to the test instance.
The fifth step is to give the test instance the class that most closely matches the surrounding neighbors. This may be done by voting or by determining the weighted average of the neighboring categories.
Sixth Step: The instance's predicted class is based on the class it was allocated in the preceding step.
The seventh and last step is to evaluate the accuracy and precision of the predictions using evaluation metrics such as F1 score, recall, and precision.

Method for Deep Neural Networks

Machine learning techniques known as Deep Neural Networks (DNN) attempt to simulate brain activity. Many different jobs, including image recognition and language translation, have made use of these networks due to their extreme versatility. Deep Neural Networks are versatile because they can solve complicated problems using a variety of network topologies that go beyond simple feed-forward networks [12]. To achieve a certain goal, Deep Neural Networks may have their structure adjusted by adding or removing layers and connecting nodes.

Computer program

To begin, make sure your data is ready for the Deep Neural Network method by cleaning, preprocessing, and scaling it.

Second Step: An input layer, a hidden layer (or layers), and an output layer make up a Deep Neural Network algorithm. The network is trained using back propagation with randomly initialized weights and biases.

Third, to get a feel for how well the network will do on new data, it is tested on a test dataset after construction and training.

Fourth Step: Adjusting the model's hyper parameters, such its layer count, neuron count per layer, learning rate, and activation functions, may lead to better outcomes if the model's performance isn't up to pace.

Step 5: Learning curves, confusion matrices, or feature significance may be used to show the outcomes of Deep Neural Networks.

Step 6: After the model has been trained and tested, it may be put into action to generate predictions using fresh data. Several methods exist for deploying the model, including incorporating it into an existing web app or generating it as an independent program.

Statistical Analysis

This study used the IBM SPSS [13] statistical program to examine the results produced by Deep Neural Networks and the Innovative K Nearest Neighbor Algorithm. The study's dependent variable is accuracy, whereas the independent variables are images and objects. Separate T-tests were used to compare the two methods of detecting fake news [14], [15].

RESULTS

Improving the accuracy of detecting fake news on Twitter is the goal of this research, which employs the Innovative K Nearest Neighbor approach and compares its outcomes with those from Deep Neural Networks. The proposed Innovative K Nearest Neighbor Algorithm attained an accuracy of 81.557%, a considerable increase over the existing Deep Neural Networks (DNNs). When comparing the two groups, the proposed model was more accurate than Group 2 (Deep Neural Networks) and Group 1 (Innovative K Nearest Neighbor Algorithm).

The accuracy results for two techniques are shown in Table 1, which contains 42 data points, 21 from each group. We used a set of twenty-one parameters to find out how accurate each method was. When put to the test against DNNs, the Innovative K Nearest Neighbor Algorithm attained an accuracy of 81.557%. Compared to Deep Neural Networks, the suggested Innovative K Nearest Neighbor Algorithm definitely outperforms them. One independent sample test compared Deep Neural Networks to Innovative K Nearest Neighbor Algorithms, and the findings are in Table 2. An average of 81.557 percent accuracy was achieved by the new K Nearest Neighbor Algorithm, whereas Deep Neural Networks averaged 79.544 percent. While Deep Neural Networks had a standard deviation of 2.419, the unique K Nearest Neighbor Algorithm had a standard deviation of 3.7312. The outcome for Group 2 was a standard error of 0.5279, according to the Innovative K Nearest Neighbor Algorithm and Deep Neural Networks, whereas for Group 1 it was 0.8142. These findings may give some insight on the algorithm's precision and robustness. The outcomes of the Deep Neural Network and the Innovative K Nearest Neighbor Algorithm's independent samples testing are shown in Table 3.

Here we can see how two sets of algorithms—Innovative K closest neighbor and Deep Neural Networks—compare in terms of average accuracy using bars that indicate the values of each category. On the one hand, we have the various categories shown on the X-axis, and on the other, we have the average accuracy as a percentage. Because the bars aren't the same height, we can tell that the two datasets disagree on the average precision. When comparing the results of two organizations that have used machine learning techniques, this kind of graph is quite useful. It makes comparisons a breeze.

DISCUSSION

According to the results of the inquiry, the Innovative K Nearest Neighbor Algorithm seems to outperform Deep Neural Networks, as shown by a significant value of 0.007 ($p < 0.05$). The Innovative K Nearest Neighbor Algorithm achieves an accuracy of 81.557%, surpassing that of Deep Neural Networks.

According to the article's author, the Innovative K Nearest Neighbor algorithm was able to detect 77% of fake news on sites like Twitter [16]. The author asserts that among other sites, Twitter included, the Innovative K Nearest Neighbor approach detected false news with a success rate of 78% [17].The author of the research [18] used Deep Neural Networks to reach a 76.5% accuracy rate in classifying social media posts as fake news. An impressive 75.9% accuracy rate in identifying fake news was achieved by the author using Deep Neural Networks [19].

One potential drawback of this work is the amount of time needed to train the Innovative K Nearest Neighbor Algorithm, which might be a problem when dealing with large datasets. Improving the system to learn the dataset quicker and handle more items is the next logical step for this investigation.

CONCLUSION

Innovative K Nearest Neighbor Algorithm outperformed Deep Neural Networks Algorithm with an accuracy rate of 81.55%, according to the results. Although the accuracy gap was just 2.31 percent, the results demonstrate that the Innovative K Nearest Neighbor Algorithm outperformed the Deep Neural Networks Algorithm.

DECLARATIONS

Potential Litigation:

There is no potential bias in this paper.

The Role of the Authors

Participation in data collecting, data analysis, and paper writing was carried out by Author CH A K. Conceptualization, data validation, and text critical evaluations were all authored by R S.

Praise and Honor

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TABLES AND FIGURES

Table 1. Innovative K Nearest Neighbor & Deep Neural Networks methods were evaluated using 21 out of 42 examples (N=42) in the study. When compared to Deep Neural Networks, the Innovative K Nearest Neighbor method achieved a higher accuracy of 81.557%.

S.NO	Rate of Accuracy for K-Nearest Neighbor Algorithm (%)	Degree of Accuracy in a Deep Neural Network
1	88.0	76.5
2	87.0	76.9
3	86.0	77.0
4	85.5	77.1

5	85	77.5
6	84.6	77.6
7	84.1	77.9
8	84.0	78.0
9	83.0	78.1
10	82.0	78.2
11	81.3	78.5
12	80	78.7
13	79.8	78.9
14	79.6	79.0
15	79.3	79.1
16	79.0	80.0
17	78.5	81.2

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18	78.0	82.0
19	76.0	83.0
20	75.5	84.0
21	75.0	85.0

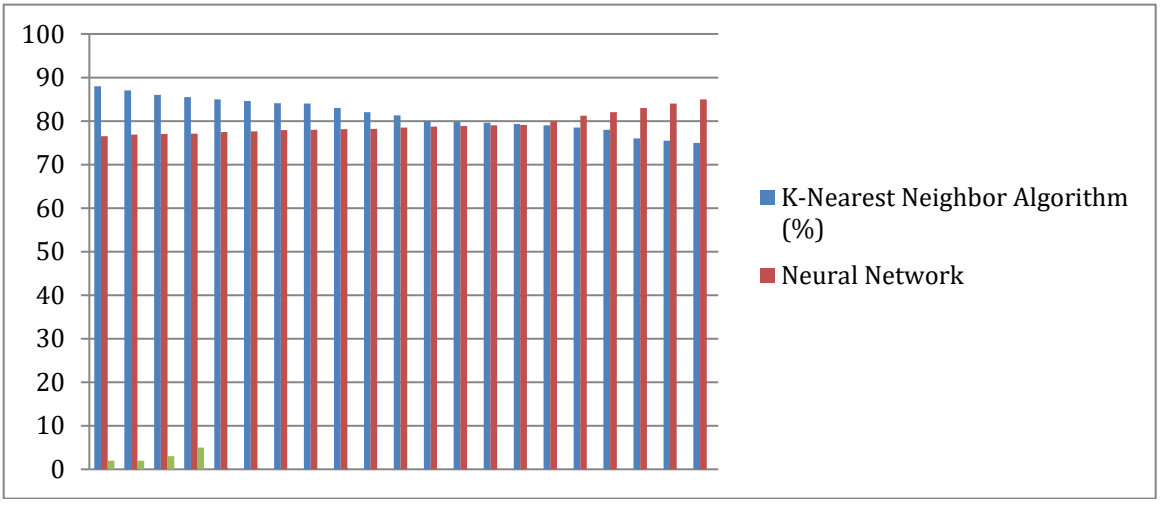

fig.1 K Nearest Neighbor & Deep Neural Networks methods

Table 2. The research used independent samples to test two methods: Deep Neural Networks & Innovative K Nearest Neighbor. Deep Neural Networks achieved an average accuracy of 79.24%, whilst Innovative K Nearest Neighbor achieved 81.55%.. Innovative K Nearest Neighbor and Deep Neural Networks both have standard error means of 0.814 and 0.527, respectively. Further, whereas Deep Neural Networks in group 2 had a standard deviation of 2.419, Innovative K Nearest Neighbor in group 1 had a standard deviation of 3.7312.

	Algorithm	**N**	**Mean**	**Typical Deviation**	**Normal Error**

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Accuracy	A Novel K-Nearest Neighbor Methodology	21	81.557	3.7312	.8142
Accuracy	Deep neural network	21	79.248	2.4192	.5279

Table 3. This table displays the results of a comparison between Innovation K Nearest Neighbor and Deep Neural Network, two methods that were evaluated on different datasets. Using an independent sample t-test, we compared the new approach to the old one. Using a 95% confidence interval and a significance threshold of 0.007, the analysis was carried out, showing that p is less than 0.05.

	Algorithm	**F**	**sig.**	**t**	**df**	**2 tail significance**	**Average variation**	**Variation in standard error**	**lower**	**upper**
Accuracy	Assumed to be equal variances	8.02	.007	2.333	40	0.025	2.319	0.993	0.310	4.327
	No assumption of equal variances made			2.333	33.61	0.025	2.319	0.993	0.298	4.339

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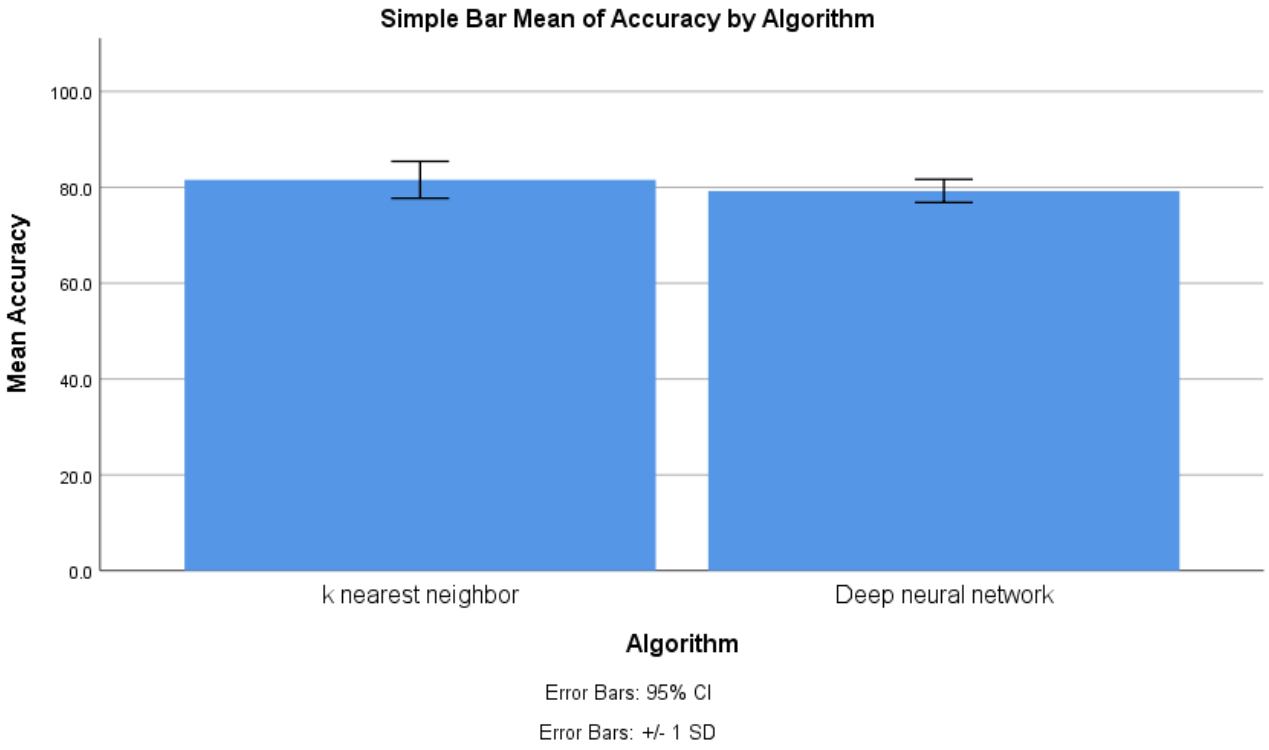

Fig. 2. Innovative K Nearest Neighbor & Deep Neural Networks' accuracy performance was examined using a bar graph. Group 2 (Deep Neural Networks) is shown on the X-axis, while the average accuracy for Group 1 (Innovative K Nearest Neighbor) is shown on the Y-axis in this picture.