

FAKE NEWS DETECTION USING MACHINE LEARNING

E.M.M.W.Edirisinghe, V.Vinoharan

*Department of Information and Communication Technology
University of Vavuniya
Sri Lanka
shanedirisinghe13@gmail.com*

Abstract

The spreading of fake news via diverse media is a major issue due to its potential to cause significant harmful impacts on society. Although social media is an emerging field offering various benefits, the reliability of news is questionable. Further, the identification of fake news is a challenging task due to factors such as the vast volume of online information, its rapid dissemination, and the evolving strategies employed by individuals who generate and promote fake news. The objective of this study is to propose a solution for Fake news by implementing a fake news detection model by using long short-term memory networks. This paper presents a four-stage approach to fake news detection. The first stage focuses on the data cleansing process, involving the fixing or removal of incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset. The specific steps in this process may vary across datasets but typically include actions such as eliminating null values, punctuation and introducing lowercase transformations. The second stage, tokenization, separates text into units such as sentences or words, i.e., splitting strings of text into smaller pieces, or “tokens”. The third stage, vectorizing data, involves the conversion of word data into a numerical format suitable for deep learning applications by the popular word2vec algorithm to convert. The last stage, long short-term memory networks (LSTM), which are a special kind of Neural Network generally capable of understanding long-term dependencies, has been used for natural language processing tasks that can be trained to generate coherent and grammatically correct sentences by learning the dependencies between words in a sentence. The proposed technique is evaluated using a LIAR dataset gathered from the fact-checking website PolitiFact through its API. This dataset comprises 12,836 human-labelled short statements sampled from diverse contexts, including news releases, TV or radio interviews, campaign speeches, etc. The labels for news truthfulness are fine-grained in multiple classes: pants-fire, false, barely-true, half-true, mostly true, and true. The dataset is divided as 6:2:2 for training, validation, and testing. Finally, the proposed framework would be able to achieve an accuracy of 96.36%. The model will be trained initially by taking the use of the appropriate training datasets from LIAR. Based on the probability and the Accuracy calculated from the algorithm, the news will be considered as fake or real news.

Index Terms—Fake News, Natural Language Processing, Machine Learning, Long Short-term Memory Networks, Deep Learning