

Fake News Detection Analysis

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Abstract. Fake news is a major issue in the current time, it has caused serious problems on a global scale in the recent past. This paper talks about some of the existing solutions, issues with such solutions and improvements that can be made for a better outcome.

Keywords: Fake News, Deep Learning, Text Summarization, Artificial Intelligence

1 Introduction

1.1 Motivation

What is fake news? It is the intentional and calculated presentation of false information or misinformation for the express purpose of misleading the reader. Even though this seems like a small issue at first, it can have catastrophic effects when deployed on a grand scale. One need not look further than the recent elections, where both parties were negatively affected by this, and more importantly the common man.

This became a major cause for concern with the advent of social media. When every single platform started to become a news provider, or rather fake news, to be accurate, with it's own set of sources, whose veracity cannot be objectively judged. As each and every news article cannot be checked for truth fullness on a large scale, the idea of coming up with an automated solution came into picture using the technique of deep learning and AI.

If we are to successfully overcome the predicament, the average consumer would be able to effectively make the right decisions that could lead to a better life for himself and his fellow neighbour.

1.2 Issues with Existing Solutions

The state of the art solutions that have been deployed and tested till now have all either categorized a news articles in a binary fashion. However, we cannot label news as fake or otherwise with little knowledge and context of the truth. And most of the fake news that gets proliferated has a semblance of truth to it, and requires common sense to judge correctly. As existing solutions are mostly keyword based, AI can easily be fooled. In fact, other AI have been deployed to generate fake news. This is the weakness in the existing approach.

1.3 Proposal

Our approach involves providing meta information to the algorithm along with the actual content of the document. This information could involve the page-rank of the website hosting the document along with the page-ranks of the websites cited in the article.

We would parse the articles cited in the document and compare the similitude between them. This would combat the issue of spurious websites citing popular articles whose content barely resembles the content in the article being judged. Another weapon which we could employ in our arsenal is to compare the article with other popular articles that have been reported by verified publishers on the same topic.

The goal of this endeavour is to apply a confidence to the articles instead of taking a binary classification approach.

2 Related Work

Related works to solve this problem revolves around Linguistic approaches^[1] which involve Data Representation, Deep Syntax, Semantic Analysis^[2]. This project aims to leverage these approaches to better analyze the article under question. The aim here is to not only consider the current article but also involve the related articles and judge it based on what is happening in reality. This topic seems very similar to the popular problem of "Spam or Ham"^[3], but the major difference is that Spam detection does not require contextual information, the algorithm need not understand what is the truth in order to decide whether a mail is spam or not.

To keep users engaged and maintain retention rate a number of fake news writers use provocative language for their own nefarious purposes, under this assumption a preliminary analysis can be done on the initial content of the article to determine if a further analysis is required. The text summarizing^[4] techniques can be used to generate a gist of the article and run an initial analysis. For the purpose of this project a very popular kaggle dataset will be used^[5], this dataset is quite comprehensive in terms of the variety of the data and quantity for training. Most of the related work in this field has been around a binary classification as the end result, but this project aims to turn that into a confidence prediction algorithm, meaning, the end result would give an insight about how fake (evaluation metric) an article under question is.

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