Content Based Fake News Detection Using Knowledge Graphs

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Abstract. This paper addresses the problem of fake news detection. There are many works already in this space; however, most of them are for social media and not using news content for the decision making. In this paper, we propose some novel approaches, including the B-TransE model, to detecting fake news based on news content using knowledge graphs. In our solutions, we need to address a few technical challenges. Firstly, computational-oriented fact checking is not comprehensive enough to cover all the relations needed for fake news detection. Secondly, it is challenging to validate the correctness of the extracted triples from news articles. Our approaches are evaluated with the Kaggle's 'Getting Real about Fake News' dataset and some true articles from main stream media. The evaluations show that some of our approaches have over 0.80 F1-scores.

1 Introduction

With the widespread popularization of the Internet, it becomes easier and more convenient for people to get news from the Internet than other traditional media. Unfortunately, open Internet fuels the spread of a great many fake news without effective supervision. *Fake news* are news articles that are intentionally and verifiably false, and could mislead readers [AG17a]. With characteristics of low cost, easy access, and rapid dissemination, fake news can easily mislead public opinion, also disturb the social order, damage the credibility of social media, infringe the interests of the parties and cause the crisis of confidence [VRA18, SCV+17]. We all know how it has occurred and exerted an influence in the past 2016 US presidential elections [AG17a]. Hence, it is important and valuable to develop methods for detecting fake news.

Most existing works on fake news detection are based on styles, focusing on capturing the writing style of news content as features to classify news articles [GM17, Gil17, Wan17, JLY17]. Although they can be effective, these approaches cannot explain what is fake in the target news article. On the other hand, knowledge based (or content based) fake news detection, which

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