User Social Engagement Centric Fake News Detection in OSN's

Santosh Kumar Uppada
(COE18D005)
Department of Computer Science and Engineering
Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram

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Abstract

Social Media Analytics focuses on gathering information from various Social Networks and to find insights from it. With the availability of internet, the impact of Social Networks has become high. As the problems due to Social Media is inevitable, there is a larger scope for research on mitigating the issues caused by Social Networks and its impact on the society. Major challenges of Social Networks are "Online Games and Challenges", "Phishing", "Cyberbullying", "Fake News" or "Yellow Journalism".

Fake News is defined as intentional or unintentional spread of news which is unreal or intentionally created and spread with some internal motto. Fake News is generally published in terms of text, images, audio, video, or reports. As a part of detecting Text-based Fake News, we proposed Association Rule Based Classification (ARBC). ARBC is a supervised learning model that uses association rule discovery for constructing classification system. ARBC has three phases namely rule generation, rule pruning, and classification. Tweets related to US elections is extracted from the Amazon AWS data repository. Text-based tweets are only considered for processing, and tweets with images and languages other than English are discarded. The model achieved an accuracy of 84.26%.

As Text-based modeling is too specific to the domain, propagation patterns are considered to detect Fake News and Fake accounts. The proposed SENAD (Social Engagement based News Authenticity Detection) model deals with analyzing parameters like user authenticity, news authenticity and user bias for detecting both Fake News and Fake Accounts. FakeNewsNet is the crawler used to extract news and tweets. Base authenticity score is calculated for the accounts purely based on their account parameters like age of the account, following/followers ratio, verified etc. Basic authenticity score of new user/post is assigned to 50, and based on the interaction with Fake/Real posts, the score either increases or decreases. The authenticity of User/Post less than 50 is considered as Fake and above 50 is considered as Real. It was observed that User authenticity can be considered a significant factor in determining the authenticity of the news. The proposed model achieved an accuracy of 93.7%.

Tweet related, Linguistic, and user attribute related data can be used to classify news articles into fake or real. In this model, features at text, temporal and user-profile level are extracted and analyzed as a part of feature engineering. Stacking-based ensemble models are also used for classifying tweets and news articles into real or fake. FakeNewsNet crawler is used to extract URLs related to tweets and posts labeled by PolitiFact and GossipCop. Logistic Regression, Linear Regression, Random Forest Classifier, Support Vector Classifier and Gradient Boosting Classifier are different classifiers used. Initially Textual, Temporal, and User-related attributes are analyzed separately, and the combination of attributes that gives better results are considered. The proposed model achieved an accuracy of 93.48% in detecting Fake articles/tweets.