Cyberbullying Detection in the Libyan Dialect Using Convolutional Neural Networks

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Abstract

Recently, the widespread use of social media has increased, leading to increased concerns about cyberbullying. It has become imperative to intensify efforts and methods to detect and manage cyberbullying through social media. Arabic has recently received increasing attention to improve the classification of Arabic texts. Given the multitude of Arabic dialects used on social media platforms by Arabic speakers to express their opinions and communicate with each other, applying this approach to Arabic becomes extremely challenging due to its structural and morphological complexity. Analyzing Arabic dialects using Natural Language Processing (NLP) tools can be more challenging than Standard Arabic. In this paper, the impact of using stopword removal and derivation techniques on detecting cyberbullying in the Libyan dialect was presented. The efficiency of text classification was compared when using a Libyan dialect word list alongside pre-generated Modern Standard Arabic (MSA) lists. The texts were classified using Convolutional Neural Network (CNN) classifiers, and the experiments showed that when using Libyan dialect words, the accuracy

results were 92% and 83%, and when using only Standard Arabic stop words, the accuracy results were dropped to 91% and 77%. Based on these results, the higher accuracy was obtained when using the presented stop words list which it is specific to the Libyan dialect, and they had a positive impact on the results, better than Standard Arabic stop words.

Author keywords

Arabic Dialect; Convolutional Neural Network; Cyberbullying; Deep Learning; Meta-Learning; Natural language processing; Removing stop words

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