

Paper title:Aggression Detection on Social Media Text Using Deep Neural Networks, Vinay Singh,Aman Varshney,Syed S. Akhtar,Deepanshu Vijay,Manish Shrivastava, 2018
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Aggression Detection on Social Media Text Using Deep Neural Networks

The paper “**Aggression Detection on Social Media Text Using Deep Neural Networks**” presents methods to detect aggression in social media text. The Author has used both standard Machine Learning techniques as well as Deep Learning techniques to perform the experiment. The paper has taken in consideration the context, sentiment and the use of aggressive words and phrases to detect aggressive language. In the paper ML technique like SVM works better than MLP (Multi-layered perceptron). Basically the dataset have been classified into **CAG (Covertly aggressive)**, **OAG (Overtly)** and **NAG (Non-Aggressive)** in order to classify various social media texts.

We can advance the research activity by various ways:

1. We can include other multi-modalities like Audio, Video or Pictures along with text.

- There are various techniques to extract information from a video clip like **ASR** (Automatic Speech recognition) which converts the spoken words in video into text which further can be studied using NLP like **sentiment analysis**.
- We can also use Face recognition from **Computer vision** and feed it into convolutions to study various semantics of the video. Also techniques like Video captioning can also be used in synchronisation with audio analysis.

2. We can also develop the model to detect other languages.

Inclusion of different languages is a challenging task in NLP due to different grammatical structure and vocabulary. But we can use certain approaches like

- Pre-processing the text and identifying different languages in a text. We can use language identification methods like Machine Learning algorithms to classify texts (SVM, Naive bayes), Statistical methods (frequency based), Character n-gram etc.
 - Another approach can be to use pre-trained multilingual models like **BERT, XLM, RoBERTa** etc. These models can be fine tuned on specific tasks like sentiment analysis or named-entity recognition (NER).
- (There is still extensive research going on about handling code mixing in NLP).

3. Incorporating more features from social media platform like user's profile, history and interaction with other users.

- This can be done using RNN, LSTM techniques which keep a record of user's past interaction and give feedback on the concurrent texts. This helps to generalise the text and understand what the text means in context of the user. Social media analytics can be used. Before that we need to feature engineer the text in order to get maximum out of it. Machine Learning algorithms like Random forests can be used in the process.

4. Incorporating more advanced methods to even detect sarcasm and irony

- For this, a need arose to define contextual understanding and emotion. To accomplish this we need to do two things - gather a stack of target words that display sentiment shifts (sarcastic words) based on context; And with an objective word given an expression, how to naturally identify whether the objective word is used in an exact or sarcastic sense. Collecting information is done by the use of an information retrieval system

The paper: *A. Ashwitha, G. Shruthi, H.R. Shruthi, M. Upadhyaya, A.P. Ray, T.C. Manjunath* *Sarcasm detection in natural language processing*, states the various methodologies and approaches towards sarcasm detection.

5.A futuristic model could be to detect aggression on a Real-time basis.

- This is stated well in the paper: *H. Herodotou, D. Chatzakou, N. Kourtellis, Catching them red-handed: Real-time aggression detection on social media, in: 2021 IEEE International Conference on Data Engineering, ICDE, 2021.*