Identifying Propaganda in Online News Articles using a Cross-Disciplinary Approach

Sneha Nanavati, Aniket Alam, and Manish Shrivastava

International Institute of Information Technology, Hyderabad 500032, India
sneha.nanavati@research.iiit.ac.in
aniket.alam@iiit.ac.in
m.shrivastava@iiit.ac.in

Abstract. In recent years, a lot of work has been done in the field of propaganda analysis in media. While the automated propaganda analysis systems work well for large scale data-sets they are often devoid of the context that comes with the news events as these models don't take media theories into account. Traditional studies conducted in the field of content analysis remain difficult to scale for large data-sets due to the manual nature of the work. This paper aims to reconcile the two by performing context-dependent propaganda identification on Indian news articles using a blend of mass communication and natural language processing.

Sentiment analysis is used to understand the authors attitude toward a semantic concept and successfully extract unambiguous sentiment mentioned in the text but it does not perform well on highly context-dependent data like news articles [1]-[9]. The one-dimensional approach of a positive-negative sentiment analysis lacks to comprehend the nuance of a news article [5]. Alternate methods like Affect Analysis is employed that goes beyond the polarity to represent the emotions that the text induces in its reader [3]. Crowdsourcing methods have also been employed to estimate the bias of an article on a topic, one such example is that of NewsCube2.0 [7]. Our focus should shift on creating news-specific methods of sentiment and effect analysis that goes beyond positive and negative overtones and takes into account the effect on the reader and their perceptions. News articles have a rather subtle implication of propaganda due to journalistic writing practices. The current sentiment dictionaries perform poorly on news articles due to the absence of a specialised sentiment dictionary and lead to shallow bias detection. On the other hand, social scientists studying media bias have developed comprehensive theories in the past few decades but most of them require a manual evaluation and cannot be scaled to the vast amount of news articles flowing-in daily [6]. There are two main types of content analysis that are often applied by social scientists: qualitative and quantitative. A qualitative study requires human interpretation of the text as the researcher seeks to identify every single instance of media bias to include subtle details [8]. While a quantitative study involves scrutinizing the occurrence of specific words and phrases, using a codebook as a guide requiring less intense human intervention. This shows the potential to be automated but risks missing subtle forms

of bias. Numerous study on media bias conducted by social scientists use qualitative content analysis as they provide more comprehensive results [11]-[2].

Propaganda analysis performed using these mass communication theories bring dated insight and often analyse the content of past that lacks relevance with the contemporary news. With rapidly changing news cycles, we need a method that takes the learnings from mass communication theories and enables the creation of a scalable model to deal with modern data streams of news articles. This paper proposes a two-fold analysis of news articles using a cross-disciplinary approach that blends the subjectivity of mass communication theories and brings the scalability of an NLP model. The method collectively brings forward a richer understanding of bias using Miller's Propaganda Devices, Laswell's Communication Model and Geoffman's Framing Theory and making them scalable using Word Choice and Labeling to provide a context-dependent understanding of propaganda bias. Our data-set is a curation of 900 articles covering 28 events that took place in India from 2014 to 2017. To avoid selection bias, the events were selected by identifying the trending events every month using Google News Analytics. These 28 events were then manually annotated into four groups: Supreme Court Rulings and National Schemes, Corruption Cases and Internal Conflicts, Military Activities and Terror Attacks, Violence Against Minorities and Instances of Dissent.

We first employ Miller's Propaganda Device as it helps us identify the strategies that are used to influence the readers by leveraging social stereotypes embedded in our culture. The Propaganda Devices provides people with tools to critically analyse and identify instances of propaganda in mainstream media. The seven propaganda devices were developed by Clyde R. Miller, the co-founder of the Institute of Propaganda Analysis, during the Great Depression [10]. For this study, we have modified the original seven propaganda devices and narrowed them down to five as two of the original devices dont make any meaningful contribution with regards to our dataset. For this study, 10 curators annotated 10 articles from each of the 28 events using a taxonomy created by modifying Miller's Devices. The annotators identify instances of propaganda laced language and highlight them using one of these five tags: Name-Calling, Glittering Generalities, Transfer, Card Stacking and Misplaced Attribution. The guidelines provided were:

1. Name-calling: Where the propagandist stigmatizes and characterizes certain groups of people to create fear or hatred. The alienation is done by giving negative labels to those individuals, communities, races, nations, policies, beliefs and ideals which the propagandist would have us denounce and reject. Any dissenter of popular belief or practice is susceptible to being called heretic. Some examples of the negative labels used are Fascist, demagogue, dictator, Red, Financial oligarchy, Communist, alien, outside agitator, economic royalist, Utopian, rabble-rouser, troublemaker, Leftie, Presstitute.

2. Glittering generalities: Where the propagandist associates ideas of virtue to further their purpose and garner support. This is done by appealing to our emotions of love, kindness and brotherhood. Positive words, often echoing the constitution, are used. Words that suggest shining ideals like freedom, honour, liberty, justice, public service, progress, democracy, empowerment and Hindu Rashtra are often used. As Name Calling is a device to make us form a judgment to reject and alienate, Glittering Generality is a device to make us accept and approve, without examining the evidence.
3. Transfer: Where the propagandist connects national or religious symbolism to further their intentions. Using this device, the propagandist extends the authority, approval and prestige of something we respect and revere to something he would have us accept. In the Transfer, device symbols are constantly used, like that of the national flag, military might, religious symbols stir emotions of nationalism and pride for the motherland. This can work negatively as well, for example, an image of a Pakistani flag can stir negative emotion and feelings of animosity.
4. Card stacking: Where the propagandist influences the demonstration of their objectives through overemphasis or underemphasis promoting misinformation and selection of facts. Only one side of the story is presented as the complete truth by the selective display of facts and omission of the evidence.
5. Misplaced Attribution: Where the propagandist credits or attributes an event to a person who does not hold the responsibility of the said event. The subject of the action is not the one connected to the action, they don't have the agency. For example: if an event is about education ministrys latest policy, the news piece heavily mentions individual from another ministry and skips over the key players who brought forth the policy from the education ministry. This could be seen as a case of misplaced attribution.

The curators were freshmen enrolled in Computing and Human Sciences course at the university. These individuals have shown to possess critical thinking and are academically competent. The curators were relatively unaware of the events and do not follow daily news, this helped us avoid perfunctory bias. The annotation guideline was explained to them and they were left to process the data without any external interference. The annotated articles provide us with a customised dataset for evaluation using Word Choice Labelling while also doubling as a specialised dictionary to aid future studies. Word Choice Labelling is an automated process that utilised the tags and context derived from the manually annotated data. The aim of the study is not to optimise the manual annotation but to use the data from it to get better context-dependent results on our computational model.

The second part includes conducting word choice and labelling using learnings from Laswell's Communication Model and Geoffman's Framing Theory. Laswell's Model of Communication is divided into five components, each having its analysis. It is represented by: Who, Says What, In

Which Channel, To Whom and With What Effect. Of them, our focus is on "Says What" and therefore we will be conducting Content Analysis. Content Analysis is associated with the evaluation of the aim of the message and its secondary intent. We conduct this content analysis in accordance with Framing Theory which presents and assigns meanings to events to influence the perception of the reader [4]. Framing theory, an extension of agenda-setting, focuses on the core of an issue by placing it in the range of a certain meaning also known as "frame". This "frame" affects how the reader processes the information and influences the choices they make. These frames have a uniform reporting on the NERs and semantic concepts mentioned in an event. We first conduct the routine preprocessing such as tokenisation, part-of-speech tagging, parsing, named entity recognition and coreference resolution. For the next step, we identify phrases referring to a person, group or an idea; these form the candidates in our workflow. The next step is that of candidate alignment where the phrases referring to the same candidate are grouped. We embed the candidate using word2vec model to find the affinity propagation to align the noun phrase coreferences. We then finally conduct a context resolution. This process would effectively employ methods and models from mass communication theories in a computationally viable approach.

Keywords: Media Bias · Propaganda Identification · Frame Analysis · Content Analysis

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