

Improving Journalism through the Web: Framework for Media Bias Mitigation

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ABSTRACT

In this paper, we present our multidisciplinary research on a major problem of journalism, i.e., the media bias problem. Bias in the news media often causes a sharp increase in political polarization and in the cost of conflict on social issues such as the Iraq war. Bias in news articles is much complex than explicit expression of opinion or sentiments. It is difficult, if not impossible, for readers to have penetrating views on realities against such bias. While the problem has been extensively studied in the area of mass communication and journalism, effective solutions are barely developed. We investigate the media bias problem from a computational perspective and propose a practical solution.

Categories and Subject Descriptors

H.5.3. [Group and Organization Interfaces]: Web-based interaction; H.5.4. [Hypertext/Hypermedia]: Navigation; K.4 [Computers and Society]: Social Issues.

General Terms

Human Factors, Design, Experimentation.

Keywords

Media Bias, News, Aspect-level Browsing, News Distribution Service, Political News, Political View Identification, Comments, Commenters, Sentiment Pattern.

1. INTRODUCTION

The web opens up new opportunities to overcome the limitations of traditional news media. We present our interdisciplinary research effort on a major problem of journalism, i.e., the media bias problem. Bias of the news media is an inherent flaw of the news production process, spanning news gathering, writing, and editing stages. At every single stage, news is probably never free from the producer's subjective valuation and external forces such as owners and advertisers. The resulting bias often causes a sharp increase in political polarization [3] and distorts social awareness

on critical public issues [6]. As journalism is one core function of the web, it is important to consider the problem in designing news delivery models.

We propose a practical approach, *media bias mitigation*, based on the potential of the web to create active news reading experience. While admitting the prevalence of bias, the approach attempts to reduce the effect of the biases on the reader's experience rather than to clearly prove or correct them. We provide users with tools for active interactions with which they easily discover and experience diversity of existing biased views. As such, we support users themselves to develop their own, more balanced views free from specific biased views. The proposed approach has clear advantage over dealing with the problem from the news producers' perspective. News producers have made considerable efforts to reduce bias. They have established 'journalism ethics and standards' and adopted adversarial reporting formats such as point-counterpoint roundtable discussion; however, the effectiveness of these approaches entirely depends on the efforts of individual journalists or requires significant changes in the news production process.

2. The Media Bias Problem

Media bias has been a problem ever since the birth of journalism. The problem is not because of the absence of good journalists and it persists regardless of journalism quality [5][2]. Many readers also accept bias naturally and often consider it as a matter of choice [4]. Many works have studied the cause and forms of the problems [1], influence on readers' perception, and provided detailed case studies with critical issues [9].

Embodiment of bias in news articles is much complex than explicit expression of opinion or sentiments. We review the forms [2] of bias embodiments and map them along the news production process. In the gathering stage, bias is expressed through fact selection such as commission¹, omission, story selection, and source selection. The biases are articulated in the writing stage through labeling, word choice and tone, etc. In the editing stage, biased views are further embodied indirectly in allocating the spaces for articles and their locations, and selecting photos.

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¹ A pattern of passing along facts that tend to support a certain point of view.

3. NewsCube

As an initial proof of concept, we develop and experiment with a novel news service system, NewsCube [7]. NewsCube automatically creates and promptly provides readers with multiple classified views on a news event; it enables *aspect-level news browsing*, by classifying news articles according to the different aspects of the event they saliently cover, presenting them fairly, and recommending articles with contrasting aspects. Users can easily compare different articles and discover rich facts of the selected news event.

NewsCube reveals fact selection biases in straight news articles. Straight news article is the most common type of articles that people face in their daily news reading. Users can compare different fact selections among news articles of the same event through NewsCube. This is important specifically for straight news articles since they mostly concentrate on delivering facts.



Figure 1. NewsCube Screenshot (English mockup version).

Figure 1 shows the articles covering different aspect of the news event “The May 2006 Government announcement of the new property tax plan”. The event involved a nationwide debate on whether the plan would lead to a massive tax increase or normalize the property tax. Many articles emphasized the tax increase for certain houses. The article group at the top left corner of Figure 1 shows an example of these articles. However, there were also different articles, for example, covering the effects of the plan on average houses, comments of the policy designer, etc. Figure 1 also shows these articles in different article groups. The article presented in the top right corner articulates the aspect ‘Chief policy secretary says the tax will increase further and stabilize home prices’. The article at the bottom right corner articulates the aspect ‘the government’s plan does not increase property taxes for houses in most provinces’. Reading these different articles, readers can understand the announced tax plan from different viewpoints.

In our experiments, NewsCube users read more number of articles and were aware of more diverse facts than those of a baseline news service. A significant portion of NewsCube users also positively responded that the service helped them to develop more balanced views.

4. Utilizing Collective Intelligence for Political View Analysis

We also seek to use collective intelligence of the web for media bias mitigation [8]. We observed that commenters of news stories have high potential to reveal the political orientation of the stories. While bias rife in political news articles, it is difficult to recognize their political orientation through computational text analysis. The discourse of political news articles is very complex; the discourse ranges over various domains such as party, government, economy, environment, etc.; different political topics involve diverse complex arguments.

Admitting the practical limitation of news text analysis, we approach to utilize commenters’ participation as well as their knowledge and intelligence. Based on extensive study on commenters’ behaviors, we discovered that their interpretation of the political orientation is often condensed in the sentiment of comments. The study uncovers *sentiment pattern*, the pattern in the sentiment of comments responding to political news articles; for example, a liberal commenter may mostly leave a negative comment to conservative articles or a positive comment to liberal articles.

The study revealed that there exist *predictive commenters*; those who have a clear political preference and express their views consistently towards various political issues. They actively express their preferences responding to the political news articles, showing a high degree of regularity in their sentiment patterns. When their comment is negative, the article’s political orientation can be predicted to be the opposite from that of the commenters; when the comment is positive, it can be predicted to be the same as that of the commenter (See Figure 2).

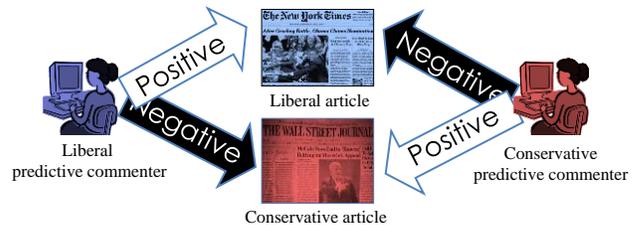


Figure 2. Commenting Pattern of Predictive Commenters.

Taking advantage of the observation, we develop a novel method which identifies political orientation of news stories without any complex news text analysis. The use of predictive commenters and their comments greatly reduces the high complexity of political view identification. Identifying sentiment from comments is relatively less complicated, specifically when interests are narrowed down to positive and negative. Comments are usually concise, often explicitly express sentiments, and frequently include explicit words such as “great” or “worse” which can be used as cues for identification. Details of the experiments can be found in [8].

5. Conclusion

In this paper, we provide an overview of our multidisciplinary investigation of the media bias problem. The recent growth of the Web provides unprecedented opportunities to overcome the limitations of traditional news media. While it is possible to create and experiment new journalism spaces in this environment, the solution to improve the quality of journalism and public discourse

still remains largely unexplored. We develop a computational framework for media bias mitigation as a practical approach to resolve the media bias problem. The framework attempts to provide diversity in news reading and enable readers to overcome biased views.

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