Prototype Bias Checker: A Lightweight System for Detecting Source and Automation Bias

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Abstract

This project outlines a simple prototype for a "bias checker"—a lightweight tool that flags possible bias patterns in news and online text. The system focuses on three core ideas: (1) the distribution of sources used, (2) the presence of repeated stylistic or framing signals, and (3) the degree of automation or template-like patterns in the writing. The goal is not to classify political leaning, but to surface signals that help readers judge reliability, diversity, and neutrality.

1 Introduction

Online information is shaped by both human writing and automated systems. Even simple workflows—RSS feeds, templated text, summarizers, or API-generated articles—can introduce patterned bias. The purpose of this project is to build a minimal, transparent bias-checking tool that highlights such patterns rather than making political judgments.

The tool follows a small decision process: inspect the sources referenced, detect repeated styles or phrasing, and check whether the text resembles automated or templated writing. These checks are intentionally simple so that users can interpret the results directly.

2 Related Work

Prior work on media bias typically focuses on political alignment or ideological labeling. Our approach differs by emphasizing structural signals: source concentration, repeated phrasing, or signs of automation. Research on automation bias shows that users may over-trust text that appears clean or consistent, even if it is heavily automated. Studies on source diversity similarly show that narrow citation or link patterns can shape information emphasis.

3 Methodology

3.1 Data Collection

The bias checker accepts any text input, a URL, or an RSS feed item. For pages, a small scraper collects the article text, visible links, and metadata. For feeds, the tool uses the RSS XML fields as provided.

3.2 Bias Checks

The system performs three lightweight checks:

1. **Source Distribution:** Count domains linked or cited. A high concentration suggests low diversity.
2. **Framing Patterns:** Detect repeated adjectives, loaded terms, or template sentences.
3. **Automation Signals:** Identify signs of machine-generated or templated writing, such as repeated structure or identical paragraph openings.

Each check produces a small score and a list of examples instead of a binary "biased/unbiased" label.

4 Results

In small tests with common news articles, the tool detected clear differences:

- Some outlets referenced only one or two external domains.
- Certain articles reused the same framing adjectives across sections.
- Several syndicated or AI-assisted pieces showed near-identical paragraph structures.

These simple signals were easy for readers to interpret and matched manual expectations.

5 Discussion

The prototype demonstrates that bias detection does not need ideological classification. Simple structural signals are often enough to help users notice patterns. The tool is also transparent: it shows the raw evidence rather than producing an opaque label.

The main limitation is that the checks are intentionally shallow; deeper linguistic or political inferences would require more data and more complex modeling.

6 Future Work

Possible extensions include:

- scoring source variety relative to topic norms,
- comparing an article's framing to a neutral reference dataset,
- detecting more refined markers of automation,
- exporting standardized bias summaries.

7 Conclusion

We present a simple, transparent bias-checking tool that highlights source concentration, repeated framing, and automation signals. The system is intentionally lightweight, providing evidence rather than labels, and is designed as a practical aid for readers evaluating online information.