

**Name: Nabil Faieaz Dipta**  
**ID: 20201180**

**Critical review report:**

**Paper Title:** Fake News Detection Using A Deep Neural Network

**Paper Link:** <https://ieeexplore.ieee.org/document/8777343>,

**DOI :** 10.1109/CCAA.2018.8777343

**1 Summary**

**1.1 Motivation:** The motivation outlined in the document revolves around tackling the pervasive issue of fake news. And the detrimental impact of false information on society, ranging from public perception to political discourse. By delving into the realm of Fake News Detection, the document aims to provide a robust solution to differentiate between genuine and deceptive news sources.

**1.2 Contribution:** The contribution of the document lies in its in-depth analysis of existing AI models for fake news detection, emphasizing the identification of biases within these systems. By shedding light on the insufficiency of guardrails in reducing bias, the document highlights the need for more sophisticated approaches to ensure the accuracy and fairness of the detection models.

**1.3 Methodology:** In detailing the methodology used in the research, the document presents a structured approach to understanding and evaluating AI models for fake news detection. By providing a set of specific and generic prompts, the study explores the responses generated by these models, offering a nuanced perspective on their effectiveness and limitations. The methodology serves as a foundational pillar for elucidating the intricacies of AI bias and improving the robustness of fake news detection systems.

**1.4 Conclusion:** The conclusion drawn from the study suggests a consistent pattern in the results obtained from different prompts and responses. This finding underscores the need for heightened scrutiny and refinement in AI models to ensure consistent and reliable outcomes in fake news detection. Despite the challenges posed by inherent biases and limitations in current guardrails, the conclusion advocates for further research and innovation in developing more effective mechanisms to combat fake news.

**2 Limitations:**

**2.1 First Limitation:** The first limitation of the paper is the lack of diversity in the datasets used for model implementation. The document primarily mentions the use of specific datasets such as train\_mixed.csv and fake\_or\_real\_news, which may not adequately represent the wide range of news articles and social media messages found in real-world scenarios.

**2.2 Second Limitation:** The second limitation of the paper is the focus on individual model performances without comprehensive comparative analysis. While the document highlights the accuracy, precision, and recall of models like CNN & LSTM, Naïve Bayes, and Decision Tree, it lacks a thorough evaluation of these models against each other or against existing state-of-the-art approaches.

**3 Synthesis:** The findings in the paper underscore the need for more diverse and representative datasets in machine learning model development. By exclusively using specific datasets, the models' generalizability and real-world applicability are hindered. Furthermore, while the document presents individual model performances, the lack of comparative analysis diminishes its potential to offer comprehensive insights into model strengths and weaknesses. Addressing these limitations could lead to the development of more robust and applicable machine learning models for tasks such as fake news detection and text categorization, aligning with the broader goal of enhancing model performance and real-world relevance.