I. INTRODUCTION

The 2024 Indonesian Regional Elections mark a pivotal moment as citizens choose their regional leaders, shaping the country's political direction for years to come. Public opinion plays a critical role in this process, with social media platform X emerging as a key space for political discourse. Millions of users share their thoughts on X, making it a valuable resource for real-time sentiment analysis [1], [2]. Sentiment analysis systematically classifies public opinion into positive, neutral, and negative categories [3], using advanced machine learning and hybrid deep learning models to handle the complexity and scale of the data [4], [5]. These models effectively address the challenges of sentiment analysis, offering deeper insights into the evolving political landscape.

Recent studies have used hybrid deep learning models, combining CNN and BiGRU, to analyze X data for hate speech detection [6]. These methods achieved 88.12% accuracy and incorporated attention mechanisms and word embeddings like BERT. The research highlights the effectiveness of hybrid models in assessing public sentiment related to Indonesia's regional elections.

Incorporating a genetic algorithm (GA) into these models can further optimize them. GA is essential for this research as it excels in feature selection and hyperparameter tuning by mimicking evolutionary processes [7]. This optimization reduces computational costs and improves accuracy by iden- tifying the best configuration of model parameters, enabling the CNN-BiGRU hybrid to handle the nuanced and large-scale data of social media sentiment more effectively [8].

The integration of FastText as a word embedding method is another crucial component of this research. FastText expands feature representations by capturing subword information and morphological nuances, which is particularly valuable when dealing with Indonesia's diverse linguistic patterns [9]. This integration enhances the semantic understanding of textual data, enabling the hybrid model to classify sentiments with greater precision and context-awareness.

This research combines a CNN-BiGRU model with Fast- Text and Genetic Algorithm (GA) optimization to analyze public sentiment during Indonesia's 2024 Regional Elections. Platform X captures opinions on the candidates, parties, and issues. Challenges like short posts, ambiguous language, emotional tone, and local jargon are addressed using CNN for patterns, BiGRU for context, and FastText for linguistic diversity. GA fine-tunes the model and selects key features, improving accuracy and reducing bias. Together, these methods create a robust framework for analyzing sentiment and political discourse.

This research is intended to apply a CNN-BiGRU model, integrating FastText feature expansion and optimized with a genetic algorithm (GA) for the use of sentiment analysis surrounding the 2024 Regional Elections. This approach is organized to make the classifying process much more accurate, considering the complexity of the target data. Incorporating a genetic algorithm (GA), this research aims to contribute a more efficient and effective method for classifying public sentiment surrounding the 2024 Regional Election.