

ABSTRACT

The skyrocketing use of social media such as Twitter results in an explosion of information that can be analyzed to linguistically study the personality traits of users, one of which is narcissism. This research aims to build a narcissism detection model based on Indonesian language tweets using Long Short-Term Memory (LSTM) and improve its performance through hyperparameter optimization with Firefly Algorithm (FA). The research method starts from building hybrid dataset of 4650 tweets from Twitter and NPI questionnaire respondents. Then the data went through preprocessing, word embedding using Word2Vec, and class balancing with SMOTE technique. The baseline LSTM model was built and tested first before being optimized by the Firefly Algorithm which was tasked with finding the best combination of learning rate and number of neurons by trying variations in gamma and alpha parameters. The results showed that the best baseline model achieved an accuracy of 86.35% and F1-score of 0.7757. After optimization, the best LSTM+FA model achieved an accuracy of 85.62% with a superior F1-score of 0.7775. Despite a slight decrease in accuracy, the improvement in F1-score proves that optimization using the Firefly Algorithm is effective in improving the model's ability to detect minority classes (narcissistic) on unbalanced datasets.

Keywords: *narcissism, LSTM, firefly algorithm, SMOTE, f1-score*