
Deteksi Depresi pada Media Sosial X Menggunakan Hybrid Deep Learning CNN-BiGRU dengan Mekanisme Attention dan Ekspansi Fitur FastText

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Abstract

Depression is a global mental health disorder characterized by persistent sadness, hopelessness, and decreased appetite, which affects more than 280 million people worldwide. In Indonesia, a survey from the National Adolescent Mental Health Survey in 2022 reported 17.95 million adolescents experience mental health disorders. Identification of people with depression is still a challenge because sufferers are afraid to convey their the situation experienced due to the negative stigma of society. With the existence of social media platform X, sufferers have the alternative to to convey their situation. With large amount of user data on social media X, provides an opportunity to develop a reliable detection system. This research uses a hybrid deep learning model with an attention mechanism combining CNN and BiGRU, TF-IDF for feature extraction and FastText for feature expansion. By using a dataset of 50,523 tweets in tweets and a similarity corpus of 151,117 data, five scenarios were to optimize performance, including determining the best split ratio, n-gram configuration, maximum features, feature expansion, and attention mechanism. The results showed that the BiGRU-ATT-CNN-ATT model achieved the highest accuracy of 84.40%. This finding shows the effectiveness of the attention mechanism and feature expansion to detect depression.

Keywords: depression, hybrid deep learning, CNN, BiGRU, FastText, attention mechanism
