

Abstract

Twitter serves as a crucial platform for expressing public sentiment during natural disasters, yet understanding and addressing these sentiments remains challenging due to data volume, imbalance, and regional disparities in response. This study aims to bridge this gap by conducting geospatial sentiment analysis on 988 labeled tweets related to the eruption of Mount Marapi, categorized into four aspects which are Basic Needs, Impact and Damage, Response and Action, and Weather and Nature. The preprocessing stage includes data cleaning, case folding, tokenization, normalization, stopword removal, and stemming. Feature extraction uses TF-IDF, while class imbalance is addressed with SMOTE. Each aspect is modeled separately using Support Vector Machine (SVM) with linear, polynomial, and RBF kernels, evaluated through 10-fold cross-validation. Results show that the linear kernel performed best across most aspects, achieving 92.42% accuracy for Impact and Damage, 80.38% for Response and Action, and 94.22% for Weather and Nature. Meanwhile, the RBF kernel showed competitive performance with 89.54% accuracy for Basic Needs. Geospatial visualization highlights regional sentiment distribution patterns, offering insights into public responses across Indonesian regions. This study contributes to improving disaster response strategies by providing insights into public sentiment, enabling authorities to better allocate resources and address community concerns effectively.

Keywords: Sentiment Analysis, Geospatial Analysis, Natural Disasters, SVM, Twitter.