ANALISIS SENTIMEN ULASAN PENGGUNA PADA APLIKASI *GOOGLE CLASSROOM* MENGGUNAKAN METODE *SUPPORT VECTOR MACHINE* DAN SELEKSI FITUR *PARTICLE SWARM OPTIMIZATION*

ABSTRAK

Kebijakan PSBB mengharuskan penerapan kegiatan pembelajaran jarak jauh secara *online* menggunakan aplikasi berbasis *daring* seperti *Google Classroom*. Dengan menggunakan *Google Classroom* memfasilitasi penggunanya untuk mendistribusikan, mengumpulkan, dan memberikan penilaian terhadap tugas-tugas yang diberikan kepada mahasiswa maupun siswa di seluruh negeri. Penelitian ini bertujuan untuk mengetahui sentimen opini publik terhadap aplikasi *Google Classroom*. Dalam melakukan analisis sentimen penelitian ini menggunakan metode *Support Vector Machine* (SVM) serta metode pengoptimalan *Particle Swarm Optimization* (PSO) sebagai seleksi fitur. Pengumpulan data dilakukan dengan teknik *Scraping* dengan total 950 komentar berbahasa indonesia. Kemudian data tersebut akan berikan pelabelan antara label positif dan label negatif oleh anatator, Setelah diberikan pelabelan akan dilanjutkan dengan *pre-processing* data seperti, *case folding, data cleaning, normalization, stemming, stopword removal,* dan *tokenizing* kemudian data yang sudah melalui proses itu akan melanjutkan ke proses pembobotan kata dengan *Term Frequency – Inverse Document Frequency (*TF -DF). Kemudian data yang sudah di dapatkan tersebut akan dibagi menjadi 80% data latih (*train)* dan 20% data uji (*testing).* Algortima yang digunakan dalam pengklasifikasian ini adalah *Support Vector Machine* (SVM) dengan menggunakan metode seleksi fitur *Particle Swarm Optimization* (PSO) terhadap analisis sentimen *Google Classroom*. Hasil klasifikasi yang didapatkan dari rata-rata evaluasi

confussion matrix dengan metode SVM adalah *accuracy* sebesar 79%, *precision* sebesar 78%, *recall* sebesar 67% dan dengan menggunakan seleksi fitur PSO mendapatkan hasil *accuracy* sebesar 83%, *precision* sebesar 86%, *recall* sebesar 67% dengan iterasi sebesar 950. Dari hasil klasifikasi tersebut metode SVM ditambah dengan seleksi fitur PSO mampu menaikan nilai *accuracy* sebesar 4%.

Kata Kunci: Analisis sentimen, Klasifikasi, TF-IDF, *Pre-processing*, *Google Classroom*, *Support Vector Machine* (SVM), *Particle Swarm Optimization* (PSO)

SENTIMENT ANALYSIS OF USER REVIEWS ON THE GOOGLE CLASSROOM APPLICATION USING THE VECTOR MACHINE SUPPORT METHOD AND PARTICLE SWARM OPTIMIZATION FEATURE SELECTION

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ABSTRACT

The PSBB policy requires the implementation of online distance learning activities using online-based applications such as Google Classroom. Using Google Classroom facilitates its users to distribute, collect, and assess assignments given to students and students across the country. This study aims to determine the sentiment of public opinion towards the Google Classroom application. In conducting sentiment analysis, this study used the Support Vector Machine (SVM) method and the Particle Swarm Optimization (PSO) optimization method as a feature selection. Data collection was carried out using scraping techniques with a total of 950 comments in Indonesian. Then the data will provide labeling between the positive label and the negative label by the anatator, after being given the labeling will be continued with pre-processing data such as, case folding, data cleaning, normalization, stemming, stopword removal, and tokenizing then the data that has gone through that process will proceed to the process of weighting words with Term Frequency – Inverse Document Frequency (TF -DF). Then the data that has been obtained will be divided into 80% of training data (train) and 20% of test data (testing). The algorithm used in this classification is the Support Vector Machine (SVM) using the Particle Swarm Optimization (PSO) optimization method against Google Classroom sentiment analysis. The classification results obtained from the average evaluation of confussion matrix with the SVM method are accuracy of 79%, precision of 78%, recall of 67% and using the PSO optimization method obtains accuracy results of 83%, precision of 86%, recall of 67% with an iteration of 950. From the results of this classification, the SVM method coupled with the PSO optimization method is able to increase the accuracy value by 4%.

Keywords: Sentiment analysis, Classification, TF-IDF, Pre-processing, Google Classroom, Support Vector Machine (SVM), Particle Swarm Optimization (PSO).