

**Analisis Sentimen Berbasis Feature Selection Particle Swarm Optimization  
Menggunakan Metode Random Forest**

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**ABSTRAK**

Analisis sentimen atau *mining* opini merupakan bidang studi yang menganalisis opini, penilaian, dan emosi masyarakat terhadap sebuah produk, organisasi, individu, kejadian ataupun topik. Pada beberapa penelitian yang telah melakukan analisis sentimen, Particle Swarm Optimization (PSO) digunakan sebagai *feature selection* yang dapat meningkatkan kinerja *base classifier*. Meskipun penelitian analisis sentimen menggunakan metode Random Forest sering dilakukan namun belum ada yang dikombinasikan dengan Particle Swarm Optimization. Pada penelitian ini, tahap *text preprocessing* dilakukan beberapa proses yaitu *cleansing*, *case folding*, *normalisasi*, *stopword* dan *stemming*. Sementara tahap *feature extraction* menggunakan *Term Frequency Inverse Document Frequency* (TF.IDF). Model Random Forest berbasis *feature selection* PSO menghasilkan nilai OOB *error* lebih baik dengan nilai sebesar 20,42% daripada model Random Forest tanpa PSO menghasilkan nilai OOB *error* sebesar 28,72%. Model Random Forest berbasis *feature selection* Particle Swarm Optimization dapat mengklasifikasikan sentimen terhadap opini pengguna Twitter mengenai Bawaslu dengan menghasilkan nilai akurasi terbaik sebesar 78,35%. Meskipun model Random Forest berbasis *feature selection* PSO menghasilkan kinerja yang lebih baik namun memerlukan waktu untuk memproses *feature selection* yang relatif lama.

Kata kunci: Analisis Sentimen, Particle Swarm Optimization, Random Forest, OOB Error.

**Sentiment Analysis Based On Feature Selection Particle Swarm Optimization  
Using Random Forest Method**

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**ABSTRACT**

Sentiment analysis or opinion mining is the field of study that analyze people's opinions, review, and emotions about a products, organizations, individuals, events or topics. In several studies that have conducted sentiment analysis, Particle Swarm Optimization is used as a feature selection that can improve the performance of the base classifier. Although sentiment analysis research using Random Forest method is often carried out, nothing has been combined with Particle Swarm Optimization. In this study, the text preprocessing stage was carried out in several processes, namely cleansing, case folding, normalization, stopword, and stemming. While the feature extraction stage used the Term Frequency Inverse Document Frequency (TF.IDF). The Random Forest based on feature selection PSO model produces a better OOB error with a value of 20,42% than the Random Forest without PSO model with an OOB error value of 28,72%. The Random Forest based on feature selection PSO model classified sentiment towards Twitter user's opinions about Bawaslu by producing the best accuracy value of 78,35%. Even though the Random Forest based on feature selection PSO produces better performance, it takes a relatively long time to process feature selection.

Keywords: Sentiment Analysis, Random Forest, Particle Swarm Optimization, and OOB error.