

## INTISARI

### **Seleksi Fitur Terhadap Performa Kinerja Sistem E-Nose untuk Klasifikasi Aroma Kopi Gayo Menggunakan Metode *Support Vector Machine***

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Tanaman kopi yang berkembang di Indonesia dan memiliki kualitas yang baik diantaranya kopi Arabika dan Robusta. Kopi arabika memiliki kualitas lebih tinggi dibandingkan dengan kopi robusta. Salah satu spesialti dari Indonesia adalah kopi Arabika Gayo yang berasal dari Provinsi Aceh. Kopi memiliki aroma dan cita rasa yang khas, berbagai faktor dapat mempengaruhi hasil akhir kopi salah satunya pada proses pengolahan pasca panen. Teknik pengolahan pasca panen yang telah dikembangkan dengan proses kering (*drying*) seperti metode Natural dan Wine. Perbedaan metode pengolahan pasca panen dilihat dari waktu pemanenan dan proses pengolahan pasca panen yang berbeda dapat memberikan karakteristik kimia pada biji kopi. *Electronic Nose* dapat diaplikasikan untuk mengklasifikasi aroma yang berbeda dari jenis kopi berdasarkan proses pengolahan pasca panen yakni perbandingan jenis kopi Gayo natural dan kopi Gayo wine. Kesamaan respon sensor menyebabkan kurang spesifik dan menurunkan performa kinerja sistem dalam proses klasifikasi. Implementasi seleksi fitur dapat digunakan untuk mendapatkan data yang relevean dan mempercepat proses klasifikasi. Teknik pengolahan data menggunakan seleksi fitur dengan metode *Support Vector Machine* (SVM) berdasarkan jumlah galat *sum of absolute errors* antara hasil prediksi dengan kelas sebenarnya. Hasil penelitian menunjukkan bahwa susunan 6 kombinasi fitur terdiri dari mean, skewness, kurtosis, daya spektrum frekuensi ke-1, dan daya spektrum frekuensi ke-4 merupakan kombinasi terbaik. Hasil kinerja sistem mendapatkan nilai akurasi sebesar 93,33%, presisi sebesar 93,33% dan sensitivitas sebesar 93,33%.

Kata kunci: Kopi Arabika Gayo, E-Nose, Seleksi Fitur, *Support Vector Machine*.

## ABSTRACT

### *Features Selection of E-Nose System Performance for Classification of Gayo Coffee Aroma Using Support Vector Machine Method*

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There are two popular coffees in Indonesia and have good quality, namely Arabica and Robusta coffees. Arabica coffee has a better quality than Robusta coffee. One of the specialties from Indonesia is Arabica Gayo coffee which comes from Aceh Province. Coffee has a distinctive aroma and taste, various factors can affect the final result of coffee, one of which is in the postharvest processing. Postharvest processing techniques that have been developed by drying processes such as Natural and Wine methods. The difference in postharvest processing methods seen from the time of harvesting and the different processes can give chemical characteristics to the coffee beans. Electronic Nose can be applied to classify different aromas of coffee types based on postharvest processing, comparison of type Gayo natural coffee and Gayo wine coffee. The similarity of sensor response causes less specificity and lowers system performance in the classification process. Implementation of feature selection can be used to obtain relevant data and speed up the classification. Data processing technique using feature selection with Support Vector Machine (SVM) method based on the sum of absolute error between the prediction results and the actual class. The results show that the arrangement of 6 combinations of features consisting of mean, skewness, kurtosis, power of the 1<sup>st</sup> frequency spectrum and power of the 4<sup>th</sup> frequency spectrum was the best combination. The application of these features resulted of the system performance get an accuracy value of 93,33%, precision of 93,33% and sensitivity of 93,33%.

**Keywords:** Arabica Gayo Coffee, E-Nose, Features Selection, Support Vector Machine (SVM).